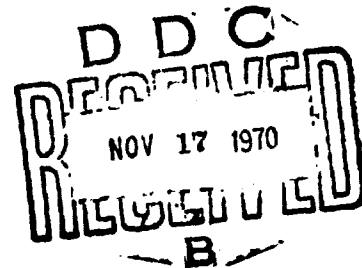REPORT NO. 68

REPORT ON THE OPERATIONS OF THE
ENVIRONMENTAL DATA COLLECTION
AND
PROCESSING FACILITY

FORMAL PROGRESS REPORT NO. 1

OCTOBER 1970

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ELECTRONICS DIRECTORATE
OFFICE OF THE ASSISTANT CHIEF OF STAFF FOR
COMMUNICATIONS-ELECTRONICS
DEPARTMENT OF THE ARMY

CONTRACT NO. DAAB07-71-C-0010
BELL AEROSPACE COMPANY
DIVISION OF TEXTRON
1050 EAST VALENCIA ROAD
TUCSON, ARIZONA 85706

REPORT NO. 68

REPORT ON THE OPERATIONS OF THE
ENVIRONMENTAL DATA COLLECTION
AND PROCESSING FACILITY (EDCPF)

FORMAL PROGRESS REPORT NO. 1

1 JULY 1970 THROUGH 30 SEPTEMBER 1970

OCTOBER 1970

Environmental Data Collection and Processing Facility
Contract No. DAAB07-71-C-0010
PR&C No. 71X02
Electronics Directorate
Office of the Assistant Chief of Staff for
Communications-Electronics
Department of the Army

Bell Aerospace Company
Division of Textron
1050 East Valencia Road
Tucson, Arizona 85706

Bell Report No. A70009-730

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FOREWORD

The Department of Defense (DOD) Electromagnetic Compatibility Program (EMCP) was established as a means of consolidating and coordinating the compatibility efforts within the military services. The EMCP is designed to achieve and maintain electromagnetic compatibility within and among the military services, and to insure that military communications-electronics (C-E) systems will not suffer operational failure or serious degradation because of radio frequency interference.

The Army EMCP has the same objectives as the overall DOD program, but is oriented toward intra-Army problems. The Electronics Directorate (ED), Office of the Assistant Chief of Staff for Communications-Electronics, is responsible for providing Army support to the DOD EMCP and for coordinating the efforts of Army commands and agencies to insure adequate participation in, and compliance with, the overall DOD and Army programs.

The Environmental Data Collection and Processing Facility (EDCPF) was established to support the ED in fulfilling its responsibilities to the DOD and Army EMCP's, and to provide support through studies and recommendations for improved spectrum management techniques. The EDCPF maintains current, comprehensive technical and tactical data bases in order to provide quick-reaction type support to other Army agencies. The Bell Aerospace Company currently operates this facility in Tucson, Arizona under Contract No. DAAB07-71-C-0010. For more details on the products and services provided by the EDCPF, see EDCPF Report No. 63, EDCPF Products and Services Catalog, dated June 1970.

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I. PROJECT MANAGEMENT AND GENERAL SUPPORT

A. GENERAL

The EDCPF participated in a CE/EW-75 in-progress review meeting held at Fort Huachuca, Arizona on 22-24 July 1970. Representatives at this meeting included OACSC-E, USAEPG, EDL, USACDCCEA, USASTRATCOM, USATECOM, EMETF, and the EDCPF.

The Director of the Electronics Directorate, OACSC-E, visited the EDCPF in Tucson, Arizona on 27 and 28 July 1970. The Director was briefed on all phases of the EDCPF, including a review of the 1969/1970 contract year and plans for the 1970/1971 contract.

Representatives of the EDCPF attended a coordination meeting at the Project MALLARD office on 4-6 August 1970. The purpose of this meeting was to exchange information on EMC methodologies so that EMC results from the U. S. and United Kingdom facilities can be correlated. Attendees at this meeting included ACSC-E, Project MALLARD, UK, BAC, ECAC, USATECOM, USAEPG, EMETF, and the EDCPF.

A meeting was held at the Headquarters, U. S. Air Force on 19 August to review the EDCPF environments representing the Tactical Air Force and Theater Air Force in support of the future time frame Army in the Field. Updates recommended at this meeting will be incorporated in these environments.

Representatives from the ACSC-E, Project MALLARD, BAC, ECAC, TECOM, USAEPG, EMETF, and the EDCPF met at the EDCPF on 24-26 August 1970 to develop the formats for the International MALLARD EMC Data Bank files and the data exchange specifications.

Table A-I, appendix A, is a list of meetings and conferences attended by personnel of the EDCPF during this report period.

The quarterly progress reports for the periods 1 March through 31 May and 1 June through 30 June were distributed during this report period. Monthly letter reports for July and August were forwarded to the ED on 11 August and 11 September, respectively. Technical and progress reports are listed in table A-II, appendix A. The contract delivery items prepared and delivered during this period are listed in table A-III, appendix A.

A total of 15,409 hours were expended on the contractual effort during the report period. A list of the personnel and hours worked has been provided the COR.

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B.   SYSTEM MAINTENANCE

All data systems and supporting files were maintained as scheduled in this quarter. The three basic systems of the EDCPF are the C-E Environmental Simulation System (CEESS), the General Retrieval and Display System (GRADS), and the Data Base Maintenance and Update System (DBMUS). The CEESS is a computer system designed to produce tactical C-E environmens from data retrieved from the six tactical data base files with controlled input data provided by military tacticians. The GRADS is a series of computer programs designed to retrieve and display all, or selected, data from all of the EDCPF data base files and the tactical C-E environments which are output by the CEESS. The DBMUS is also a series of computer programs which are designed to maintain, update and validate all of the basic files of the EDCPF (Tactical and Technical Data Base).

During this report period several enhancements were made to these systems and the supporting data base files. Generally, these enhancements involved the implementation of new processing techniques by which tactical C-E environments could be made better. More error-checks and validation routines have been incorporated into all three systems in an effort to produce better products.

Documentation of the three systems was initiated during this quarter. The documentation is taking the form of complete system documentation to include descriptions, operating procedures, data preparation, input and output data formats, and special instructions to enhance processing. See appendix B for specific details on system maintenance.

II. PROGRAM REQUIREMENTS

A. OPERATIONAL SUPPORT

During the first quarter of the contract year 21 operational support tasks were assigned. Seven of these were tasks covered by the technical requirements for the contract and all seven do not require full time effort for completion until the second and third quarters. The tasks were assigned in order to properly assign the work load for a complete year. Of the 14 customer tasks assigned during this quarter, seven were completed and seven are still being supported. Details of the effort expended on operational support tasks during this report period can be found at appendix C.

B. WASHINGTON ENGINEERING

1. General

Tasks which require coordination with the Electronics Directorate and other agencies in the Washington, D. C. area were provided by the EDCPF Washington Engineering Group. Considerable effort was expended on the acquisition of documentation, however, the major effort was expended on the EMCP MICS task which is discussed below.

2. EMCP Management Information and Control System (MICS)

The primary effort during this report period was concerned with a review of the program data sheets and continued development of a basis for determining a relative order of importance or a priority rating for EMC tasks. The MICS data base was modified to include additional elements of data. The operational programs were compiled on binary cards to reduce system turnaround time. Details of this quarter's effort are found in appendix D.

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III. MAINTENANCE OF THE C-E DATA BANK

A. TACTICAL DATA BASE

The Organizational Equipment List tapes were received from the U. S. Army Management Systems Support Agency in the latter part of this report period. These tapes contain Basis of Issue (BOI) type data and are equipment oriented by LINE NO. Also shown are TOE numbers in which the equipment is authorized. Special retrievals were performed on the tapes to extract C-E related data. Since this data reflects the most recent authorizations of equipment, the information is invaluable in the development of C-E environments.

The major effort during the past quarter was concentrated on the preparation of deployment data required for the two corps environment. This included preparation of the Equipment Authorization Files for the two corps background and foreground including opposing forces and Tactical Air support units. Preparation of this TOE type deployment data will be completed and tested for use in the deployment early in the second quarter.

All MALLARD equipment characteristics contained in MLD-17 forms issued to 28 July 1970 were received for use in the two corps deployment.

The Equipment Authorization File (EAF) for the current time frame C-E equipments was updated for use in the two corps deployment. EAF updates for all current TOE's presently on hand were prepared and merged with the current data base. Two hundred and fifty-three TOE's to be used in the two corps background deployment were removed from the current TOE data base and a separate tape of the above TOE's was prepared. These are mostly G series TOE's.

TACFIRE data was added to the two corps background deployment data. This required the update of 30 Field Artillery EAF records. All equipment authorization file data for the two corps background, less TACAIR, have been completed, including net number assignments. These records have been processed through the update program and added to the initial two corps background tape consisting of data from over 250 current TOE's.

In the Tactical Air Force part of the two corps deployment, the tropo and LOS equipments are being replaced by MALLARD versions of the AN/GRC-143 and AN/GRC-144. Additional MALLARD equipments will be added to support the USAF tactical support nodes to provide the Single Channel Access (SCA) centrals and subscribers units.

The Code File, Equipment Characteristics File, Application File, and Antenna File were maintained and updated during this period to support the deployments and special deliveries. Update of the EAF was initiated with the data required for the Enemy-75 deployment of the Front, Combined Arms Army (CAA), Tank and Air Armies.

During the next quarter actions are expected to be completed or initiated to complete all data required to support the two corps deployment. This includes update of the two corps foreground data base after error routines are completed and update of the two corps background data base after assignment of net numbers and error checks have been made.

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Preparations will be made for development of EAF data for RADA deployment which is now scheduled for the third quarter of the current contract year.

B.   MAINTENANCE AND UPDATE OF EXISTING C-E ENVIRONMENTS

1.   Future Time Frame Field Army

During this quarter the major effort has been expended on the acquisition of documentation required to update the environment which was completed during the last contract year. It has become apparent that changes are going to be required to the troop lists involving armored and aviation units. It is anticipated that sufficient documentation should be acquired during the next quarter to initiate the required updates.

Updates will be incorporated during the process of reformatting the SDS deployment tapes into a format usable by the CEESS. This process involves stripping the old deployment tapes back to an intermediate CEESS format which can be conveniently updated and error checked by the CEESS programs.

2.   Future Time Frame Tactical Air Force

Requests were made to Headquarters, U. S. Air Force this quarter for documents required as a basis for updates to the Tactical Air Force and Theater Air deployments. A visit was also made to Headquarters, U. S. Air Force, Washington, D. C. to determine if there was a basis for any updates. At the time of the visit it was recommended by the U. S. Air Force that the exclusive user multichannel equipments and systems deployed in support of the seven intertheater airfields be deleted. A request by the U. S. Air Force during the latter part of this quarter to supply certain security information indicates that the necessary documentation will be received early during the next report period and will allow the required changes to be accomplished.

3.   Future Time Frame Enemy Forces

New documentation is being requisitioned which will allow updating procedures for all enemy divisions along the FEBA and the critical HF and multichannel equipment in the areas of the Soviet Front. During the report period overlays of units, not previously required, were prepared to provide visual aids in the deployment of additional equipments. A visit to the EDL in Mountain View, California was made for the purpose of coordination on this task.

4.   Future Time Frame Theater Army

There has been no change to the COMMZ elements during this report period.

C.   DEVELOPMENT OF NEW C-E ENVIRONMENTS

   1.   Enemy-75 CAA and Front

        Early in the quarter, effort was directed toward expansion of the
environmental deployment completed during the previous contract period to include
all units and C-E equipments in a complete Soviet Front (1975). Effort was
expended in source material research, fixed file update, tactical overlay
deployment, and development of multichannel communications requirements. These
tasks were executed concurrently.

        Significant problems arise in the acquisition of resource material
in such detail as to facilitate development of BOI type data appropriate to
company level definition, and in the sanitization of source information to
permit expression of environmental data within the SECRET category of classi-
fication. Research visits have been made to Electronic Defense Laboratories
(EDL) at Mountain View, California, and to the USASA Test and Evaluation
Command at Fort Huachuca, Arizona. These research visits have provided signi-
ficant assistance in accomplishment of tasks required to support this deploy-
ment.

        It is expected that early in the next report period computer process-
ing of call cards will be initiated in the production of environmental deploy-
ment data. A detailed development of progress is contained in appendix E.

   2.   MALLARD

        During the quarterly report period a troop list was prepared to
support the background deployment of a two-corps, eight-division current time
frame field army. The elements in the troop list were task organized in
accordance with an EDCPF prepared situation statement, and a draft fundamental
deployment overlay was completed down to company level. Fixed files for
background units have been prepared, and require minor update prior to opera-
tional employment. Foreground fixed files are under preparation and will be
operational during the latter part of the next month. Fixed files for
background tactical air support elements are being prepared concurrently
with the foreground files.

        A more detailed report of progress on this task is contained in
appendix E.

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D. TECHNICAL DATA BASE

The Frequency Allocation to Equipment File (FAEF) was updated to include all J/F-12 actions received from the ED. During this quarter a total of 104 allocation requests, 133 allocation request approvals, and 34 changes or cancellations were processed into the FAEF.

The Army allocation records listed in the Frequency Allocation List (FAL) published by the ECAC were reviewed against the J/F-12 actions. A list of all entries in the FAL not in agreement with the J/F-12 documents was prepared for use in the review and correction of the next update of the FAL.

The Army Equipment Records File (AERF) update was continued with the addition of all MIDA worldwide asset data received during this quarter. Changes were made to the Army C-E equipment type classifications as reported in supplement 4 to the Status Cross Reference Index for Electronic Materiel dated 11 July 1970. This index covers all AMCTC actions approved through 22 June 1970. All new equipments and changes made to existing equipments by the Army J/F-12 actions covered in the FAEF were added to the AERF.

Component data and characteristics information were updated as required based on current TM's and special studies available on Army equipment.

Data regarding phase-in and phase-out of C-E equipment was extracted from the current Army Materiel Plan (AMP) and the Major Item Distribution Plan (MIDP).

During the next quarter MIDA worldwide assets data will be furnished to the EDCPF on microfilm in lieu of computer printouts. This will be an improvement as computer printouts frequently are almost illegible. The first group of microfilm was received on 18 September.

Data on MIDA microfilm will be checked against data in file and will be entered in the AERF as required.

It is estimated that 200 new frequency allocation actions will be received for entry into the data files. These will be processed for use in both the AERF and FAEF as required. Data required to provide the information for the Future Environmental Data (X-8) to the ECAC in the third quarter will be updated based on available source data. This will be in preparation for the delivery of data in the third quarter.

The AERF will continue to be updated as new data is received. This will include the addition of current nomenclature information, type classification, characteristics and antenna data.

A copy of SB 700-20, effective as of 1 September, has been received. Cost data changes will be entered into the AERF.

APPENDIX A

PROJECT MANAGEMENT AND GENERAL SUPPORT

Table A-I is a list of meetings and conferences attended by EDCPF personnel during this report period.

Table A-II is a list of technical, administrative, and progress reports for the period 1 July 1970 through 30 September 1970.

Table A-III is a list of contract items delivered during the period 1 July 1970 through 30 September 1970.

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Table A-I. Meetings and Conferences

Date	Purpose	Activity	Location of Conference or Meeting
10 Jul 70	Discuss EDCPF Capabilities	EWSG, ED	Tucson, Arizona
20 Jul 70	MALLARD Environment Discussion	OACSC-E (ED), ECAC	Tucson, Arizona
22 Jul 70	Discuss Acquisition of H-Series TOE's	USACDC	Fort Belvoir, Virginia
22-24 Jul 70	CE/EW-75 In-Progress Review	OACSC-E (ED), USAEPG, EDL, USACDCCEA, USASTRATCOM, USATECOM, EMETF	
27-28 Jul 70	Contract Review by the Director, ED	OACSC-E (ED)	Tucson, Arizona
28 Jul 70	MALLARD Environment Discussion	USMC, ECAC	Quantico, Virginia
29 Jul 70	Coordinate Enemy Deployment Data	OACSC-E (ED), EDL	Mountain View, California
4-6 Aug 70	Discuss MALLARD EMC Methodologies	MALLARD, OAC3C-E (ED), BAC, USATECOM, USAEPG, EMETF	Fort Monmouth, New Jersey
19 Aug 70	Present SAG Dry Run Briefing	OACSC-E	Washington, D. C.
19 Aug 70	Discuss TAF Deployments	USAF	Washington, D. C.
20 Aug 70	Presentation of EDCPF Capabilities	AMCA	Alexandria, Virginia
24-26 Aug 70	Develop Formats for the MALLARD EMC Data Bank Files	OACSC-E (ED), MALLARD, BAC, ECAC, USATECOM, USAEPG, EMETF	Tucson, Arizona
24-26 Aug 70	Coordinate Enemy Deployment Data	EDL	Mountain View, California
31 Aug 70	Discuss TACSATCOM Cost Effectiveness Task	USACDCCEA	Fort Monmouth, New Jersey
1 Sep 70	EDCPF Capabilities Briefing	USASA/EWSG, USAEPG	Tucson, Arizona
3 Sep 70	Discuss MICS PERT/COST Task	OACSC-E (C-ECAA)	Arlington, Virginia

Table A-I. Meetings and Conferences (cont)

Date	Purpose	Activity	Location of Conference or Meeting
10 Sep 70	Discuss MALLARD/MICS Task	ECAC	Arlington, Virginia
16 Sep 70	EDCPF Capabilities Briefing	USAECOM, EDL, USAEPG, EWSG	Tucson, Arizona
18 Sep 70	EDCPF Capabilities Briefing	USACDCCEA	Tucson, Arizona
21-23 Sep 70	Discuss TACSATCOM Support Requirements	USACDCCEA	Tucson, Arizona
24 Sep 70	Discussion of USAMC Data Sources	USAMC	Washington, D. C.
28 Sep 70	Discuss USAEPG Task Requirements	EMETF, USAEPG	Fort Huachuca, Arizona
30 Sep 70	Discuss TACSATCOM Support Requirements	USACDCCEA	Fort Monmouth, New Jersey

Table A-II. Technical, Administrative, and Progress Reports

Type	EDCPF No.	Title	Date
Quarterly Draft	67	Contract Formal Progress Report No. 12, 1 June 1970 through 30 June 1970	11 Jul 1970
Quarterly Final	65	Contract Formal Progress Report No. 11, 1 March 1970 through 31 May 1970	23 Jul 1970
Monthly Letter Report	-	Monthly Letter Report for July 1970	11 Aug 1970
Quarterly Final	67	Contract Formal Progress Report No. 12, 1 June 1970 through 30 June 1970	10 Sep 1970
Monthly Letter Report	-	Monthly Letter Report for August 1970	11 Sep 1970

Table A-III. Contract Delivery Items

Agency	Item	Date
ED	Review Draft of EDCPF Report No. 67, Contract Formal Progress Report No. 12	11 Jul 1970
	EDCPF Report No. 65, Formal Progress Report No. 11, Report on the Operations of the Environmental Data Collection and Processing Facility (1 March 1970 through 31 May 1970)	23 Jul 1970
	July Monthly Letter Report	11 Aug 1970
	Unclassified Sample AERF Tape and Unclassified Sample Listing of the Net/TOE Index and AERF	20 Aug 1970
	Airborne Brigade Tactical and Technical Data	4 Sep 1970
	Program Support Plan (PSP) for EDCPF Data Base Support to the Cost Effectiveness Analysis of TACSATCOM	9 Sep 1970
	EDCPF Report No. 67, Formal Progress Report No. 12, Report on the Operations of the Environmental Data Collection and Processing Facility (1 June 1970 through 30 June 1970)	10 Sep 1970
	August Monthly Letter Report	11 Sep 1970
	Extracts from the Military Reliance on the Radio Frequency Spectrum (3 KHz - 10 GHz), dated 21 November 1969	15 Sep 1970
ECAC	Military Reliance on the Radio Frequency Spectrum (3 KHz - 10 GHz)	28 Sep 1970
	Verification of ECAC Electronic Equipment Environment Records	10 Jul 1970
	Verification of ECAC Electronic Equipment Environment Records	17 Jul 1970
	Verification of ECAC Electronic Equipment Environment Records	28 Jul 1970
	TOE Inventory Listing and Card Deck	28 Jul 1970
	Verification of ECAC Electronic Equipment Environment Records	31 Jul 1970
	Verification of ECAC Electronic Equipment Environment Records	12 Aug 1970
	Verification of ECAC Electronic Equipment Environment Records	19 Aug 1970
	Verification of ECAC Electronic Equipment Environment Records	24 Aug 1970
	MALLARD Equipment Characteristics for EMCA-MLD-17A Forms	28 Aug 1970

Table A-III. Contract Delivery Items (cont)

Agency	Item	Date
ECAC (Cont.)	Allied Code Book	31 Aug 1970
	Verification of ECAC Electronic Equipment Environment Records	31 Aug 1970
	Verification of ECAC Electronic Equipment Environment Records	3 Sep 1970
	Verification of ECAC Electronic Equipment Environment Records	4 Sep 1970
	Verification of ECAC Electronic Equipment Environmen" Records	17 Sep 1970
	Verification of ECAC Electronic Equipment Environment Records	22 Sep 1970
	Verification of ECAC Electronic Equipment Environment Records	28 Sep 1970
USAEPG	Extracts from the Army Equipment Records File (AERF) Listing	27 Jul 1970
	MALLARD Phase II Frequency Assignment Rationale	31 Jul 1970
	Net Frequency Listing, Situation III	4 Aug 1970
	CE/EW-75 Troop Lists	5 Aug 1970
	Tactical Overlays and Communications Systems Diagrams	5 Aug 1970
	EW Organizational and Equipment Authorization Diagram	7 Aug 1970
	Net Frequency Listing, Situation III, Force Model 1	7 Aug 1970
	AN/ARC-116 (ASC-10) Information	20 Aug 1970
	MALLARD Equipment Characteristics for EMCA-MLD-17A Forms	28 Aug 1970
	Frequency Allocation to Equipment File (FAEF) for the Army, Navy and Air Force	18 Sep 1970
MALLARD	MALLARD I, Vulnerability Analysis, Final Report	21 Sep 1970
ECOM (EDL)	Code File Description and Samples	17 Sep 1970
	Enemy Deployment Data	10 Jul 1970
	Army-75 Information	15 Jul 1970
	Panel 2, EDCPF Drawing No. D506-112	24 Jul 1970
	Tactical Overlays and Communications Systems Diagrams	5 Aug 1970
	Enemy Deployment Data	4 Sep 1970

Table A-III. Contract Delivery Items (cont)

Agency	Item	Date
USACDCCEA	Theater Army CP Listing	24 Jul 1970
	Theater Army CP Listing	27 Jul 1970
	Single Channel Net Data to Support TACSATCOM Cost Effectiveness Task	29 Sep 1970
USAF (FTC)	Frequency Allocation to Equipment File (FAEF) for the Army, Navy and Air Force	14 Jul 1970
NORTHROP Corporation	Program Support Plan (PSP) for Enemy Forces Deployment Data for Use on the Terminal Guidance for Indirect Fire Study Contract	5 Aug 1970
	Enemy Forces Deployment Data for Use on the Terminal Guidance for Indirect Fire Study Contract	8 Sep 1970
USAMSSA	Return of Six Reels of Confidential Tape	14 Sep 1970
	Return of Six Reels of Confidential Tape	22 Sep 1970
HQ USAF	Security Information	16 Sep 1970
USASTRATCOM	Theater Army (COMMZ) Tactical Overlays and Communications Systems Diagrams	22 Sep 1970

APPENDIX B

SYSTEM MAINTENANCE

The three basic systems of the EDCPF are as follows:

    C-E Environmental Simulation System (CEESS)
    General Retrieval and Display System (GRADS)
    Data Base Maintenance and Update System (DBMUS)

Figure B-1 shows the overall relationship between the three systems. Generally, the DBMUS supports the development, maintenance, and update of the tactical and technical data base files of the EDCPF. The CEESS supports the production of tactical C-E environments. The GRADS is used to selectively retrieve and display data from the tactical and technical data base files and the C-E environment tapes. The output of the GRADS can be on any selected medium such as 80-column cards, printouts, or magnetic tapes.

In this report period the major emphasis has been devoted to the documentation of the CEESS and the conversion of previous environment tapes to the new CEESS formats. Documentation of the DBMUS and GRADS has been accomplished on an individual program basis, however, the overall documentation of these systems will be scheduled for completion in the next report period. Figure B-2 presents the format of the CEESS document. As stated previously, the document has been drafted and is currently being reviewed and edited. Publication of the document is scheduled for the first part of the next quarter.

The CEESS constitutes the automated portion for the production of C-E environments as shown in figure B-3. Figure B-4 illustrates a detailed flowchart of the CEESS. Also shown in figure B-4 are the primary functional categories of processing as listed below:

    (a) Initiate deployment

    (b) Coordinate positioning

    (c) Frequency assignment

    (d) Validation

    (e) Format

Note also that the coordinate positioning phase has two types of processes. The random program assigns coordinate positions to equipments around a specified command post within some geographic area in a random manner. The deterministic program processes manually assigned coordinate positions. Any one or both or a combination of the two techniques can be used for a tactical deployment. Note also that the frequency assignment function is composed of automated routines for radars, simplex net, and duplex nets and a manual frequency assignment routine. Any combination of the four routines can be employed.

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The other major effort in this report period involved the reformatting of the old Semiautomated Deployment System (SDS) produced deployment tapes into a format which is usable by the CEESS. The SDS deployment tapes (basic output of the system which are retained as historical files) were the DFA/B and the Net List C while the CEESS dpeloyment tapes are the DF090 and the DF065. The difference between the DFA/B and the DF090 is that the DFA/B is a 432 character record and the DF090 is a 224 character record. Also several data parameters have been included in the DF090 which did not occur in the DFA/B. The DF065 is much like the Net List C except that several enhancements have been incorporated in the new DF065.

The first force model deployment being processed through this reformating procedure is the Force Model 1, Situation III, deployment produced in the last EDCPF contract period. Other deployments will be reformatted on a time available basis. Figure B-5 illustrates the overall reformatting procedure.
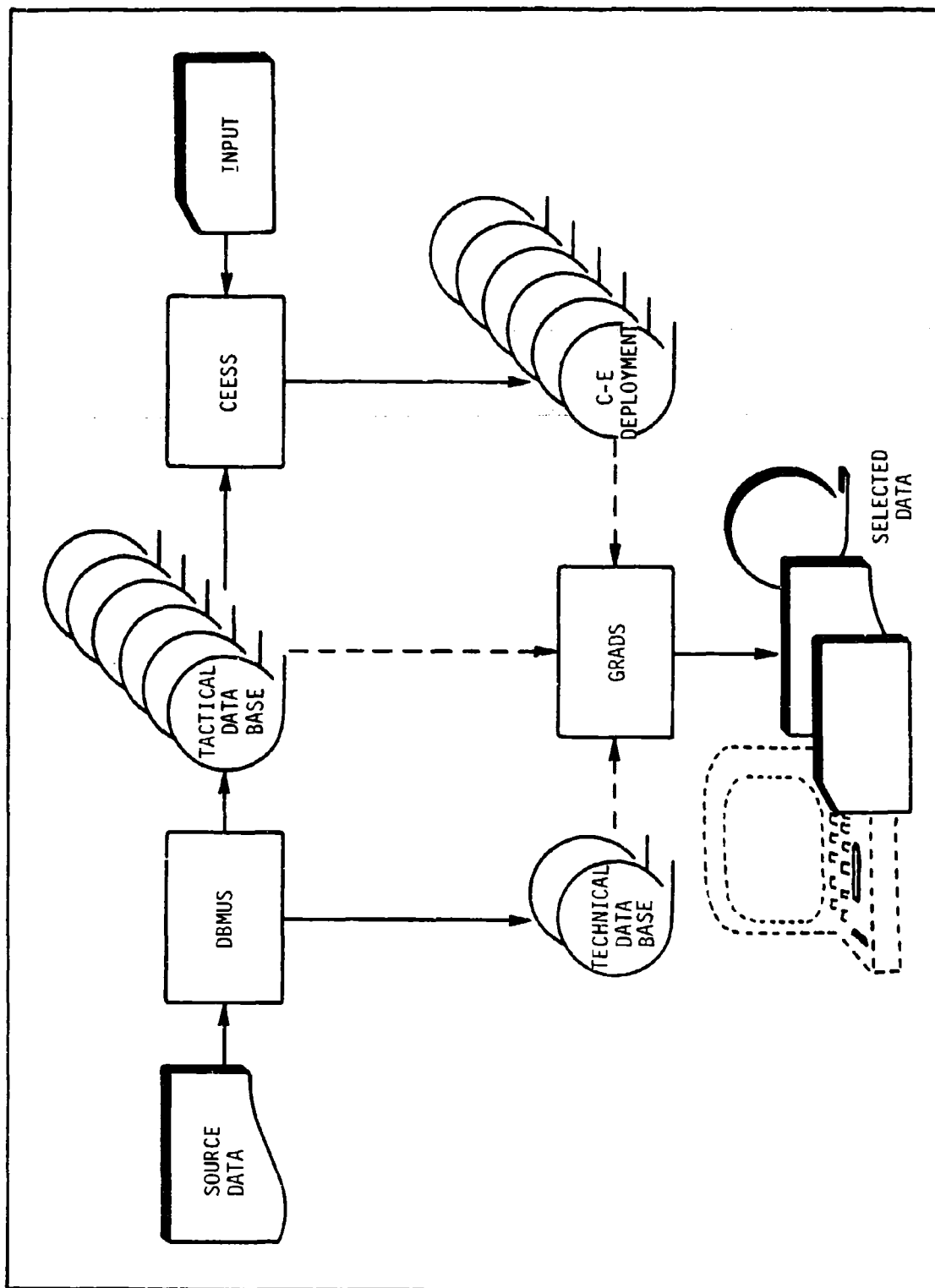
Figure B-1. Block Diagram of EDCPF Systems

C-E ENVIRONMENTAL SIMULATION SYSTEM

CEESS

A. INTRODUCTION

B. SYSTEM DESCRIPTION

    1. General

    2. Phase I Processing

    3. Phase II Processing

C. TACTICAL DATA FILE PREPARATION

    1. General

    2. File Maintenance

        a. Equipment Authorization File

        b. Equipment Netting File

        c. Equipment Application

        d. Equipment Characteristics File

        e. Equipment Antenna File

        f. Code File

    3. File Validation

D. SYSTEM OPERATIONAL PROCEDURES

    1. General

    2. Initiate Deployment

    3. Prepare Net Data Sheet and Separate Deployment

    4. Prepare Tactical Data Sheet

    5. Random Deployment

    6. Random Frequency Assignment

    7. Simplex Frequency Assignment

    8. Merge Simplex Assignment

    9. Duplex Frequency Assignment

Figure B-2. CEESS Document Format

B-4

CEESS

10. Merge Duplex Assignment Runs

11. Merge Simplex, Duplex, and Manual Assignments

12. Validate and Update Net Frequency Data

13. Assemble Net Data

14. Deployment Update

15. Assign Equipment Characteristics and Validate Deployment

16. Compute Azimuth and Validate

17. Edit and Format

18. User Format

19. Prepare Listings

E. DATA FORMATS

1. Tactical Files

2. System Files

Figure B-2. CEESS Document Format (cont)
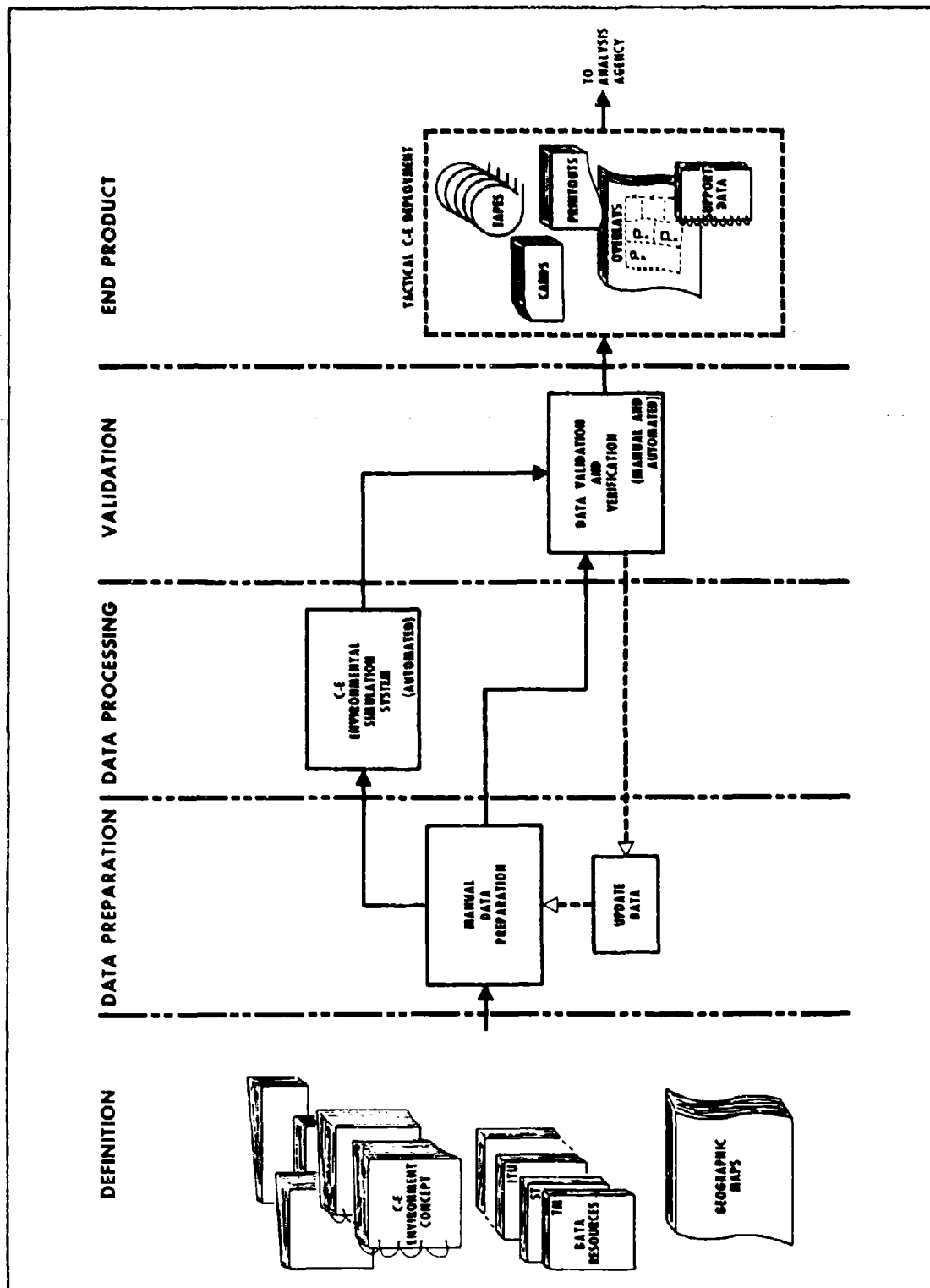
Figure B-3. General Flow Chart of Environment Simulation
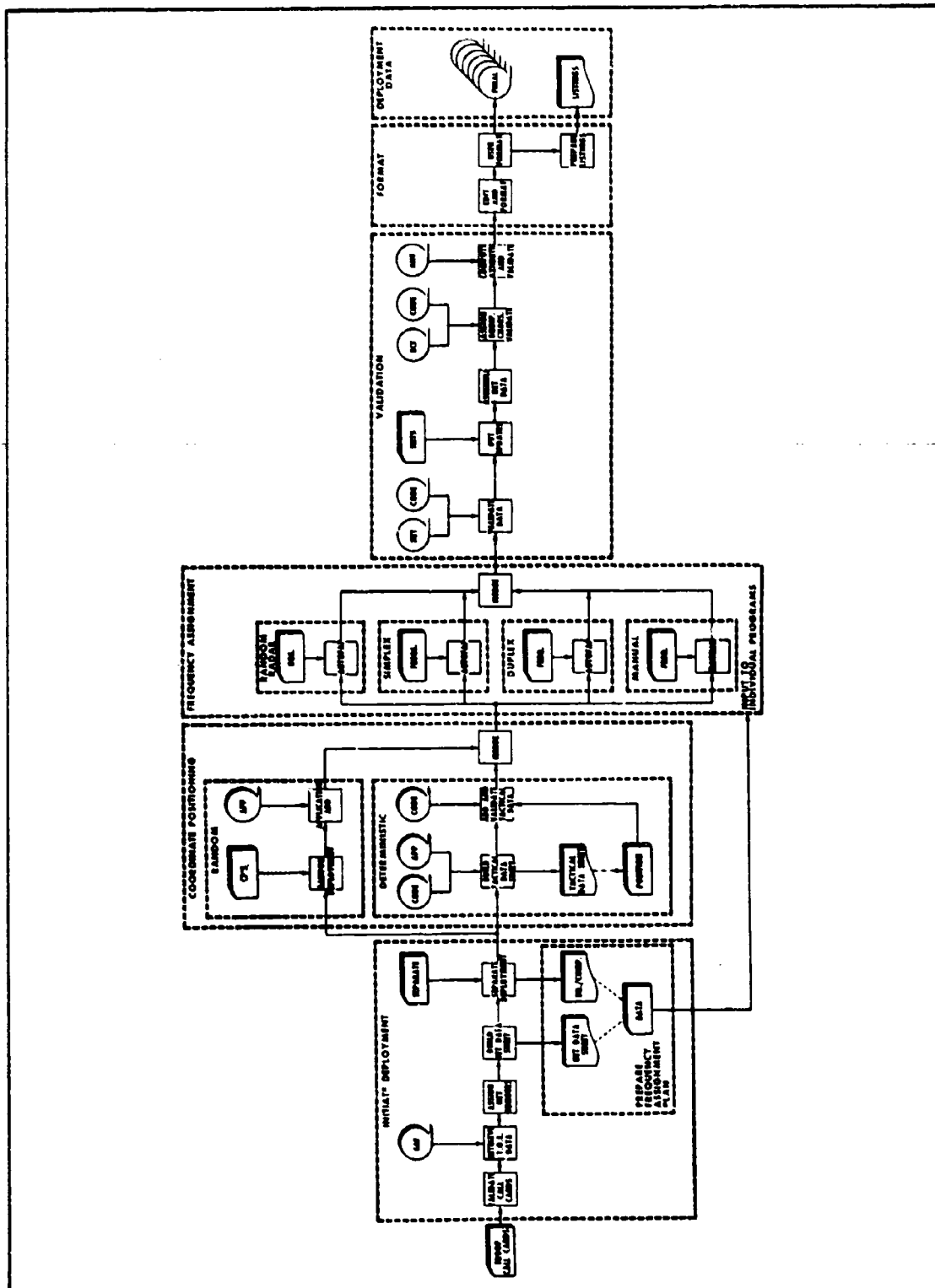
Figure B-4. Flow Chart of the C-E Environmental Simulation System

B-7
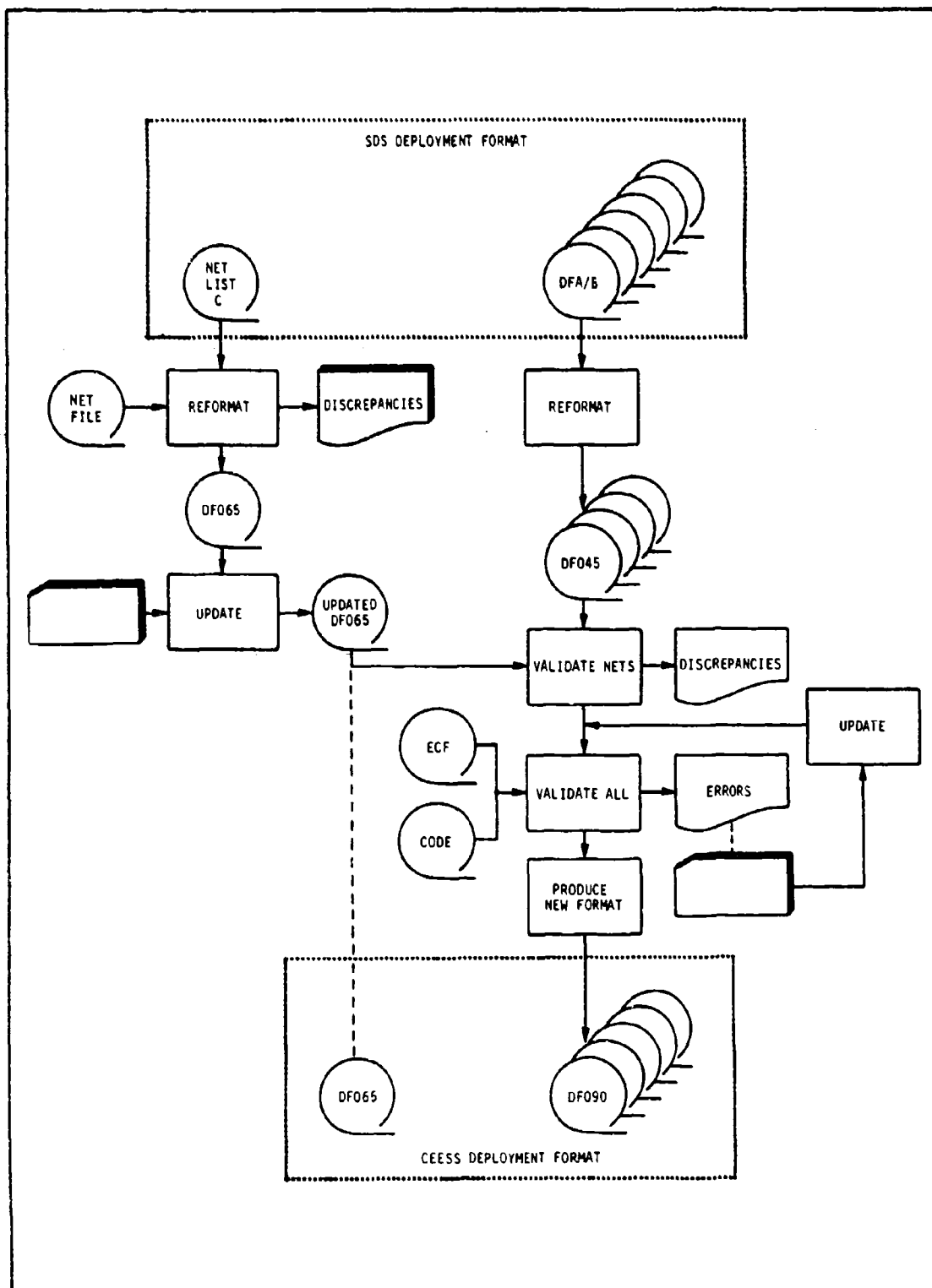
Figure B-5. Deployment Tape Reformatting Procedure

APPENDIX C

OPERATIONAL SUPPORT

The following paragraphs discuss the operational support tasks assigned during this report period. Some of the assigned tasks did not receive appreciable effort. These tasks are covered by this contract year's technical requirements and were assigned to assist in long-range planning and scheduling of work requirements. Only those tasks involving work during this period are reported.

1. **Processing of Form DD 1374 Data Reports and ECAC Forms X-1**

During this quarter 33 DD Form 1374 data reports and 106 ECAC X-1 data forms were reviewed for completeness and accuracy and forwarded to the ECAC. These data forms represent inputs from the Fourth and Fifth Army areas and the U. S. Army Alaska Command.

2. **ECAC Future Environmental File (X-8)**

An extensive review has been made of the current and future C-E equipments as reported by the ECAC as phasing-in or phasing-out in comparison against the last submission by the EDCPF to the ECAC. Extensive effort will not be expended on this task until about 1 January 1971. Completion of this task is scheduled for 1 March 1971.

3. **ECAC Vehicle Equipment and Complement Index (VEC1) File Update**

The title of this task will be changed to "ECAC Organizational Platform Allowance File (OPAF) Update."

Guidance on the requirements for the next submission of the Organization Platform Allowance File (OPAF), formerly VECI, was received from the ECAC. The following information was furnished as to the requirements of the ECAC. The next delivery of OPAF (VECI) should indicate only changes from the VECI data previously supplied. This is to include additions, deletions, and superseded TOE actions, changes to aircraft or equipment and changes in TOE's for marine craft. The delivery of the change information in lieu of a complete OPAF will facilitate the location of items which were changed and which are of interest to the ECAC.

The OPAF is to include all TOE's now in use or which are expected to be used within a short period of time. This will include some T series and the E and G series TOE's and the new H series as they are issued. In addition to the OPAF data, the delivery is to include a list of all current TOE's, aircraft and marine craft using C-E equipment. This is to include only the header card type data such as TOE number and name of unit. This list is to include those TOE's and other actions relative to the OPAF which have been obsoleted, deleted or superseded as no longer in use and previously not reported.

In addition to the above, worldwide asset information on Army aircraft and helicopters by theaters will be furnished to the ECAC based on MIDA data.

Full effort will begin on this task about 1 October 1970, with the delivery to the ECAC scheduled for 1 December 1970.

4. Duplicate Files

All documentation and computer programs will be updated as required
to maintain the up-to-date status for day-to-day operations. As new data base
files or deployment files are generated, duplicates will be made and stored at
the EDCPF alternate storage site. A complete effort on this task will begin
on 1 November 1970, with scheduled deliveries on 31 January 1971, 31 March
1971, and 30 June 1971.

5. Frequency Allocation to Equipment File (FAEF), Army, Navy and Air Force

On 14 July 1970 a copy of the FAEF was provided to the Data Base Man-
agement Division (ASFS), Directorate of Foreign Technology, Wright-Patterson
Air Force Base, Ohio. The FAEF was reduced from computer size paper to letter
size paper before delivery.

6. Planning Support to the International MALLARD
    Electromagnetic Compatibility (IMEMC) Data Base

A formal document was published on 26 August 1970 entitled "Data Base
Standards and Specifications" for the IMEMC. All members of the various cog-
nizant agencies in attendance at the planning conference agreed upon the document
and its contents. Excerpts from the document are included in the following
paragraphs.

a. General

The general requirements of the MALLARD EMC Data Base are to
provide the capability to support the EMC analysis process. This process involves
the investigation of C-E equipment and its effect on the electromagnetic environ-
ment in which it will be deployed and also the effect of the environment on
the equipment. This investigation is a vital part of the materiel life cycle
and must be accomplished with as much factual data as can be provided. Conse-
quently, the MALLARD Data Base must provide the most accurate, timely, and
factual data possible to support the EMC analysis process.

b. Data Base Files

The minimum data base files required in the IMEMC Data Base are
as follows:

(1) C-E Environmental File

(2) Equipment Technical Characteristics File - MLD-17B Data

(3) Equipment Technical Characteristics File - Curve Data

(4) Terrain and Town File

(5) Code File

The C-E Environmental File is the fundamental data input for the EMC analysis
computer programs. The remaining files will be utilized as supporting data
files to assist in the analysis process.

c.   File Specification

The data base files specifications are as follows:

Storage Medium - Magnetic Tape
800 BPI
7 Track (6 data bits, 1 parity bit)
BCD Character Set

Table C-I gives the magnetic tape overall specifications. Figure C-1 shows the general tape utilization scheme. Table C-II illustrates the BCD coding technique which will be employed in representing data characters on tape.

d.   Data Base Formats

The basic data files required are the C-E Environmental File, Equipment Technical Characteristics File - MLD-17B Data, Equipment Technical Characteristics File - Curve Data, Terrain and Town File, and the Code File. It is recognized that in a total EMC analysis procedure other factors must be considered which affect the final effectiveness scores that the analysis produces. Normally these factors are dependent upon the discrete analysis program. It is not the intent to specify all possible data that goes into an analysis program. Rather, the data bases described herein will provide the fundamental C-E environmental data and supporting information to serve as a common basis from which all EMC analyses are made. Other data will be required to support the individual analysis capabilities.

The data base files have been designed so as to be compatible with the various types of computers in use by the different ABCA countries. Such factors as computer type, word length, byte size, bytes per word, characters per byte, input data access capacity, and others, went into the development of these file formats. All records and blocking factors were considered so as to be multiples of the numbers 4, 6, 8, and 10 so that effective data processing would be optimized by the elimination of unnecessary characters which could be required in the byte process. The numbers 4, 6, 8 and 10 represent the number of bytes per word on the CDC 3300, UNIVAC 1108, IBM 360, and CDC 6500 computers.

e.   C-E Environmental File

Figure C-2 gives the data base format of the C-E Environmental File. This file contains the actual deployment information representing a tactical C-E environment from which the EMC analysis is made. The format shown in figure C-4 is for each individual record that is maintained on magnetic tape.

f.   Equipment Technical Characteristics File - MLD-17B Data

The Equipment Technical Characteristics File - MLD-17B Data contains data from the completed MLD-17B forms. Each entry in the MLD-17B forms will be extracted and put on the magnetic tape file in order that the advantages of rapid computer processing can be used to support the analysis program. Other than MALLARD equipment technical characteristics data can also be entered into the file if required.

Table C-I. Magnetic Tape Specifications

TAPE: 0.5 inch wide, 1.5 mil thick, computer grade

NO. OF TRACKS: 7   .

DATA DENSITY: 800 BPI

RECORDING MODE: NRZI

FORMAT: See figure C-1

CODE: BDC - See table C-II

REEL SIZE: 10½ inches

TAPE LENGTH: 2400 feet

PARITY: Odd

REMARKS: Each magnetic tape reel will contain at least
                         10 feet of leader and 18 feet of trailer tape
                         for tape mounting and unmounting purposes.
                         Reflective tape markers shall te used to indicate
                         the tape load point and end of file. Tape labels
                         and end of file records shall be required. Inter-
                         record block gaps will be 3/4 inch. A longitudi-
                         nal parity character shall be required at the end
                         of each record block immediately preceding the
                         interrecord block gap.
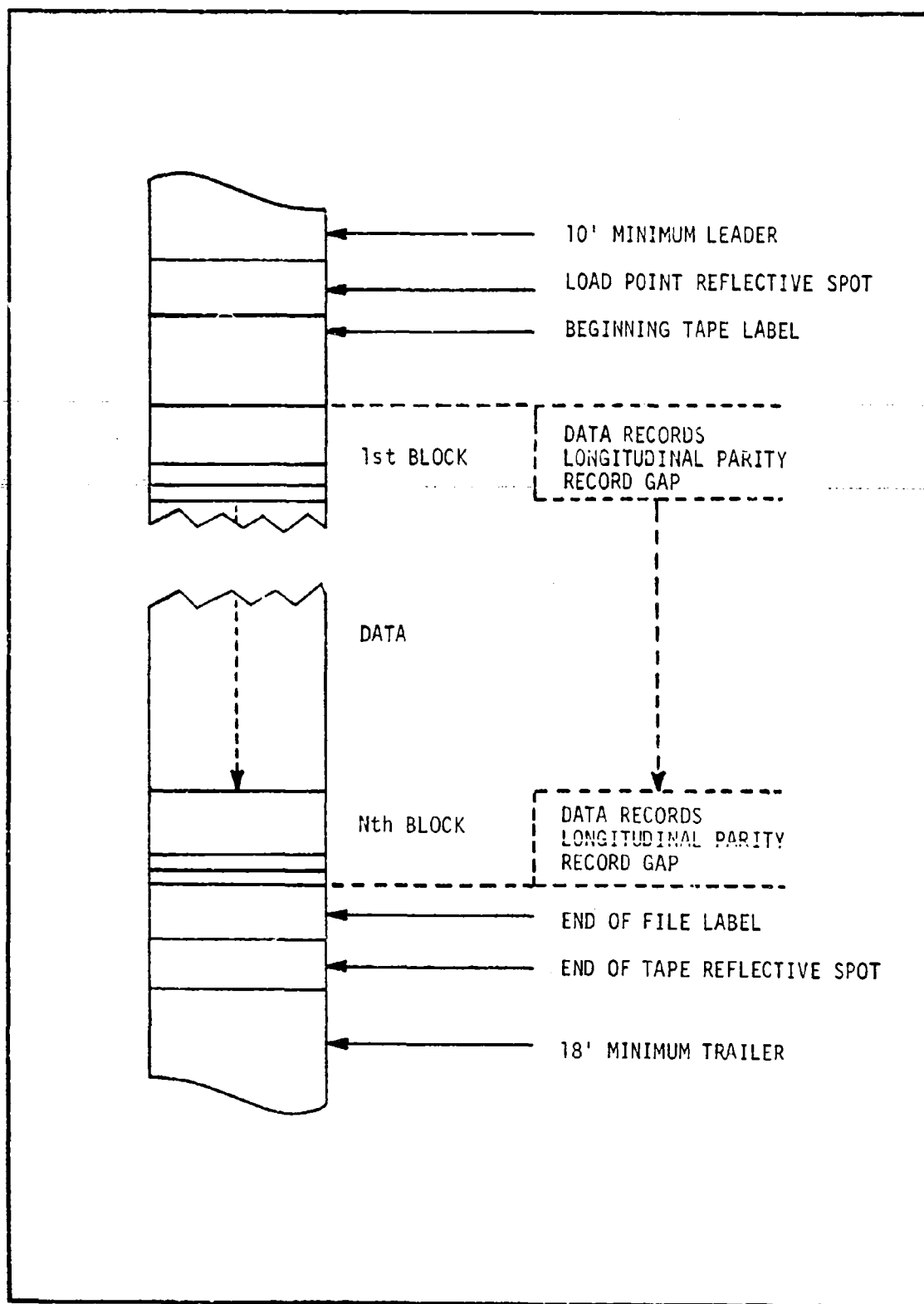
Figure C-1. Magnetic Tape Format
C-5

Table C-II. BCD Coding Scheme

6-Bit BCD Code	Character	6-Bit BCD Code	Character
00	0	40	–
01	1	41	J
02	2	42	K
03	3	43	L
04	4	44	M
05	5	45	N
06	6	46	O
07	7	47	P
10	8	50	Q
11	9	51	R
12	:	52	!
13	=	53	$
14	'	54	*
15	&	55	#
16	Z	56	\
17	±	57	>
20	+	60	Blank
21	A	61	/
22	B	62	S
23	C	63	T
24	D	64	U
25	E	65	V
26	F	66	W
27	G	67	X
30	H	70	Y
31	I	71	Z
32	<	72	]
33	.	73	Comma
34	)	74	(
35	∧	75	~
36	"	76	–
37	;	77	?

DATA FORMAT

FIELD NO.	FIELD LGTH.	CHAR. POSIT. START	CHAR. POSIT. END	CHAR. TYPE (A,N)	DATA DESCRIPTION
1	1	1	1	A	SECURITY CLASSIFICATION
2	6	2	7	N	RECORD SEQUENCE NUMBER
3	3	8	10	N	SITE TITLE
4	3	11	13	A/N	SITE TYPE
5	6	14	19	A/N	TROOP NUMBER
6	6	20	25	A/N	UNIT REFERENCE NUMBER
7	1	26	26	N	MALLARD EQUIPMENT STATUS
8	10	27	36	N	NET NUMBER
9	6	37	41	N	MAJOR EQUIPMENT NUMBER
10	6	42	48	N	ASSOCIATED COMPONENT NUMBER
11	3	49	51	A/N	VEHICLE CODE
12	2	52	53	A/N	EQUIPMENT CODE
13	3	54	56	N	COMPONENT CODE
14	7	57	63	N	LATITUDE
15	7	64	70	N	LONGITUDE
16	1	71	71	N	COORDINATE QUADRANT CODE
17	9	72	80	N	FREQUENCY
18	2	81	82	N	MODULATION CODE
19	5	83	87	N	TRANSMITTER OPERATING POWER (DBM)
20	3	88	90	N	OFF HOOK FACTOR
21	6	91	96	N	LINKED EQUIPMENT
22	6	97	102	N	AIRCRAFT HEIGHT
23	3	103	105	N	ANTENNA CODE
24	1	106	106	A	ANTENNA POLARIZATION
25	3	107	109	N	ANTENNA AZIMUTH - LOW
26	3	110	112	N	ANTENNA AZIMUTH - HIGH
27	3	113	115	A/N	ANTENNA ELEVATION - LOW
28	3	116	118	A/N	ANTENNA ELEVATION - HIGH

Figure C-2. C-E Environmental File Format

DATA FORMAT

TITLE _____ C-E ENVIRONMENTAL FILE (cont) _____

DATE _____ 70 AUG 25 _____ SYSTEM _____ IMEMC _____

CARD _____ TAPE _X_ TAPE DENSITY _800_ RECORDS PER BLOCK _4_

TAPE LABEL _____ ENVIRONMENTAL _____ NOTE: A=ALPHABETIC, N=NUMERIC

FIELD NO.	FIELD LGTH.	CHAR. POSIT. START	CHAR. POSIT. END	CHAR. TYPE (A,N)	DATA DESCRIPTION
29	3	119	121	N	ANTENNA HEIGHT
30	1	122	122	N	NO. OF CO-MASTED ANTENNAS
31	5	123	127	N	CO-MASTED ANTENNA NO. 1
32	5	128	132	N	CO-MASTED ANTENNA NO. 2
33	5	133	137	N	CO-MASTED ANTENNA NO. 3
34	5	138	142	N	CO-MASTED ANTENNA NO. 4
35	5	143	147	N	CO-MASTED ANTENNA NO. 5
36	5	148	152	N	CO-MASTED ANTENNA NO. 6
37	5	153	157	N	CO-MASTED ANTENNA NO. 7
38	5	158	162	N	CO-MASTED ANTENNA NO. 8
39	5	163	167	N	CO-MASTED ANTENNA NO. 9
40	2	168	169	N	PREEMPT LEVEL CODE
41	3	170	172	N	NUMBER OF CHANNELS
42	1	173	173	A	COMPONENT TYPE
43	14	174	187	A/N	EQUIPMENT OPERATOR
44	1	188	188	N	NCS INDICATOR
45	18	189	202	A/N	ORGANIZATION
46	28	203	230	A/N	NET FILE
47	2	231	232	A	FORCE ID CODE
48	1	233	233	A	POSTURE CODE
49	7	234	240	–	BLANK (FOR GROWTH POTENTIAL)

Figure C-2. C-E Environmental File Format (cont)

Figure C-3 presents the data format for each data entry or field in the file. A total of 175 fields (each 54 characters in length) are required to make one complete equipment record. Also note that each field has a multi-level capability of up to 99 levels (as indicated by the two digit LEVEL NUMBER) for continuing data where the 54 characters are too restrictive. This is particularly useful whenever entries on the MLD-17B form are excessively long.

g. Equipment Technical Characteristics File - Curve Data

The Equipment Technical Characteristics File - Curve Data is used to record actual spectrum affecting data curves in digital format for machine processing. Examples of curves that can be recorded in this format are the following:

> Transmitter Emitter Spectrum Curves
> Receiver Selectivity Characteristic Curves
> Antenna Patterns
> Transmitter Spurious Emission Characteristics
> Receiver Spurious Response Curves

Figure C-4 shows the format of this file. Note that a total of 60 points can be used to describe a curve in one record. However, if more than 60 points are required, then subsequent records can be used until the necessary characteristics are described. For example, if an antenna pattern is required to the detail for the total 360°, then 6 records of every 1° could be used (60 degrees per record x 6 records = 360° total). Figure C-5 illustrates the scheme for data entry.

h. Terrain and Town File

Figure C-6 gives the format of the Terrain and Town File. This file is used in the analysis programs to assist in actual equipment placement in the environment, determination of path loss in a communications link, and other such functions. Figure C-7 illustrates the technique for data entry in the file. The basic scheme is to signify a base point coordinate from which a matrix of 25 blocks can be constructed.

i. Code File

Figure C-8 presents the format of the Code File. This file is used to interpret any codes that are used in any of the other four files. Examples of such codes that will be used are as follows:

> Security Classification
> Equipment Code
> Component Code
> Antenna Code
> Terrain Code
> Data Source Code
> MALLARD Code
> Modulation Code
> Importance Level
> Vehicle Code
> Unit Reference
> Off-hook Factor
> Data Set Code
> Posture Code

DATA FORMAT

TITLE EQUIPMENT TECHNICAL CHARACTERISTICS FILE - MLD 17B DATA

DATE 70 AUG 1   **SYSTEM** IMEMC

CARD _____ **TAPE** x _____ **TAPE DENSITY** 800 __ **RECORDS PER BLOCK** 20 ___

TAPE LABEL TECHNICAL A _____ **NOTE: A=ALPHABETIC, N=NUMERIC**

FIELD NO.	FIELD LGTH.	CHAR. POSIT.		CHAR. TYPE (A,N)	DATA DESCRIPTION
		START	END		
1	5	1	5	N	EQUIPMENT CODE
2	3	6	8	N	RECORD ID NUMBER
3	2	9	10	N	LEVEL NUMBER
4	39	11	49	A/N	DATA
5	1	50	50	A	MEASURED/NON-MEASURED DATA
6	3	51	53	A/N	DATA SOURCE CODE
7	1	54	54	A	SECURITY CLASSIFICATION

Figure C-3. Equipment Technical Characteristics File –MLD 17B Data Format

DATA FORMAT

TITLE EQUIPMENT TECHNICAL CHARACTERISTICS FILE - CURVE DATA

DATE 70 AUG 1   **SYSTEM** IMENC

CARD _____ **TAPE** X **TAPE DENSITY** 800 **RECORDS PER BLOCK** 1

TAPE LABEL TECHNICAL B   **NOTE: A=ALPHABETIC, N=NUMERIC**

FIELD NO.	FIELD LGTH.	CHAR. POSIT. START	CHAR. POSIT. END	CHAR. TYPE (A,N)	DATA DESCRIPTION
1	1	1	1	A	SECURITY CLASSIFICATION
2	5	2	6	A/N	EQUIPMENT CODE
3	20	7	26	A/N	EQUIPMENT TYPE
4	20	27	46	A/N	SPECTRAL CHARACTERISTICS TYPE
5	1	47	47	A	MEASURED/NON-MEASURED DATA
6	3	48	50	A/N	DATA SOURCE CODE
7	50	51	100	A/N	SPECTRAL DESCRIPTION
8	10	101	110	A/N	X COORDINATE UNITS
9	10	111	120	A/N	Y COORDINATE UNITS
10	10	121	130	A/N	STARTING POINT (X)
11	10	131	140	A/N	INCREMENT (ΔX)
12	10	141	150	A/N	Y VALUE AT STARTING POINT
13	2	151	152	N	NUMBER OF POINTS
14	8	153	160		BLANK (FOR GROWTH POTENTIAL)
15	10	161	170	A/N	Y1 VALUE
16	10	171	180	A/N	Y2 VALUE
⋮	⋮	⋮	⋮	⋮	⋮
74	10	751	760	A/N	Y60 VALUE
75	20	761	780	A/N	REMARKS

Figure C-4. Equipment Technical Characteristics File - Curve Data Format

TRANSMITTER EMISSION SPECTRUM

12 Channel FDM
1 KHz Audio Tone
1.44 V
90% Deviation
Center F = 800.5 MHz

POWER LEVEL

33 dbm
23
13
3
-7
-17 dbm

(0.0175 MHz)
Δx

799.975 MHz
800.500 MHz
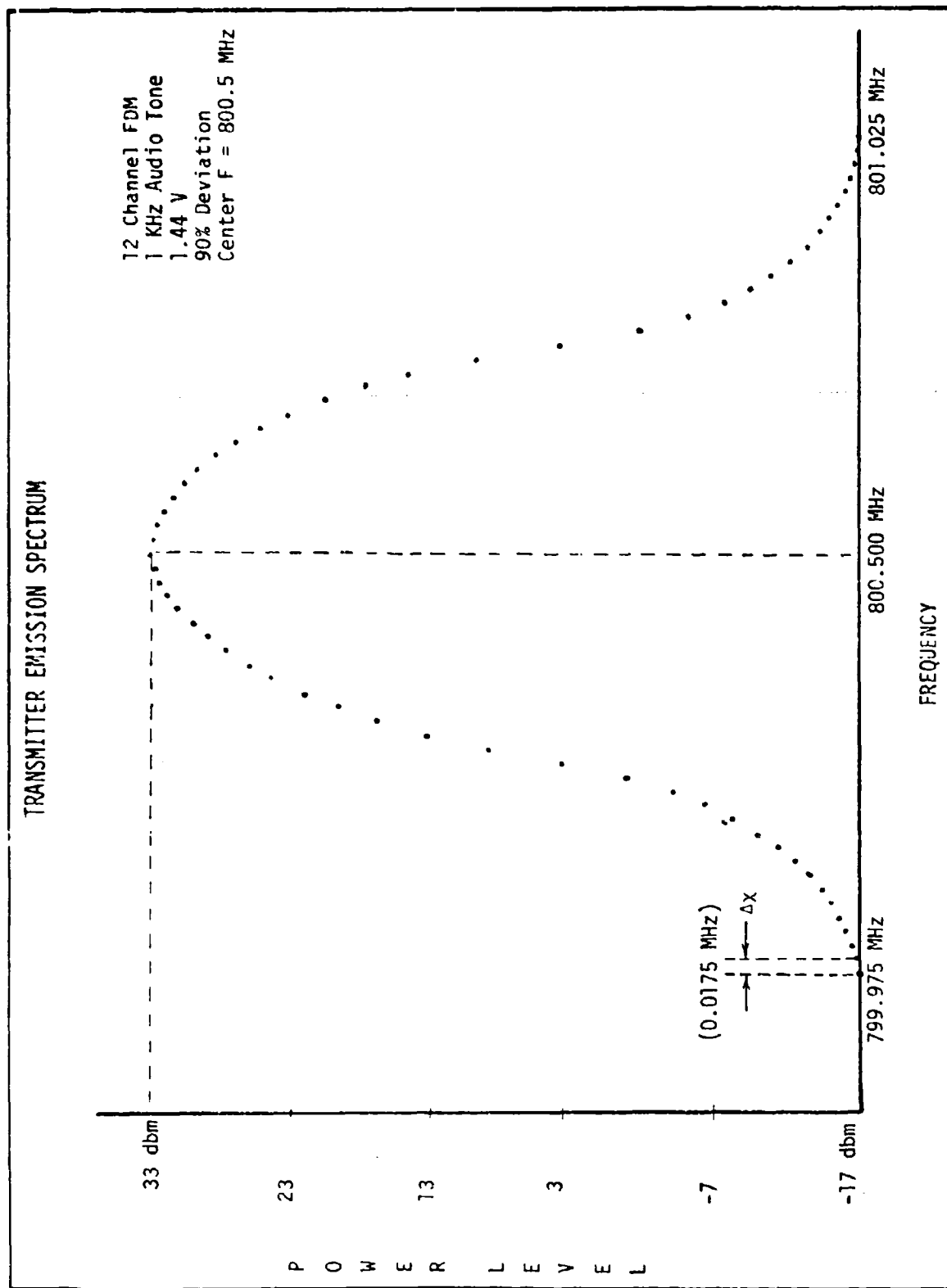801.025 MHz

FREQUENCY

Figure C-5. Data Recording Scheme

DATA FORMAT

TITLE TERRAIN AND TOWN FILE

DATE 70 AUG 25 **SYSTEM** INEMC

CARD_____ **TAPE** X **TAPE DENSITY** 800 **RECORDS PER BLOCK** 1

TAPE LABEL TERRAIN _____ **NOTE: A=ALPHABETIC, N=NUMERIC**

FIELD NO.	FIELD LGTH.	CHAR. POSIT. START	CHAR. POSIT. END	CHAR. TYPE (A,N)	DATA DESCRIPTION
1	1	1	1	A	SECURITY CLASSIFICATION
2	7	2	8	N	LATITUDE OF BASE POINT
3	7	9	15	N	LONGITUDE OF BASE POINT
4	1	16	16	N	COORDINATE QUADRANT CODE
5	3	17	19	N	BLOCK SIZE
6	75	20	94	A/N	BLOCK 1 DATA *
7	75	95	169	A/N	BLOCK 2 DATA
↓	↓	↓	↓	↓	↓
31	75	1820	1894	A/N	BLOCK 25 DATA
32	26	1895	1920		BLANK (FOR GROWTH POTENTIAL)
*					BLOCK DATA
1	5	1	5	N	AVERAGE ELEVATION
2	1	6	6	N	TERRAIN CODE
3	1	7	7	N	VEGETATION CODE
4	1	8	8	N	NO. OF TOWNS
5	3	9	11	N	TOWN NO. 1
6	7	12	18	N	LATITUDE 1
7	7	19	25	N	LONGITUDE 1
8	1	26	26	N	COORDINATE QUADRANT CODE 1
9	4	27	30	N	POPULATION 1
10	3	31	33	N	TOWN NO. 2
11	7	34	40	N	LATITUDE 2
12	7	41	47	N	LONGITUDE 2

Figure C-6. Terrain and Town File Format

DATA FORMAT

TITLE TERRAIN AND TOWN FILE (cont)

DATE 70 AUG 25   **SYSTEM** IMEMC

CARD_____ **TAPE** X **TAPE DENSITY** 800 **RECORDS PER BLOCK** 1

TAPE LABEL TERRAIN   **NOTE:** A=ALPHABETIC, N=NUMERIC

FIELD NO.	FIELD LGTH.	CHAR. POSIT. START	CHAR. POSIT. END	CHAR. TYPE (A,N)	DATA DESCRIPTION
13	1	48	48	N	COORDINATE QUADRANT CODE 2
14	4	49	52	N	POPULATION 2
15	3	53	55	N	TOWN NO. 3
16	7	56	62	N	LATITUDE 3
17	7	63	69	N	LONGITUDE 3
18	1	70	70	N	COORDINATE QUADRANT CODE 3
19	4	71	74	N	POPULATION 3
20	1	75	75		BLANK (FOR GROWTH POTENTIAL)

Figure C-6. Terrain and Town File Format (cont)

21	22	23	24	25
20	19	18	17	16
11	12	13	14	15
10	9	8	7	6
1	2	3	4	5

BASE POINT
(X, Y)
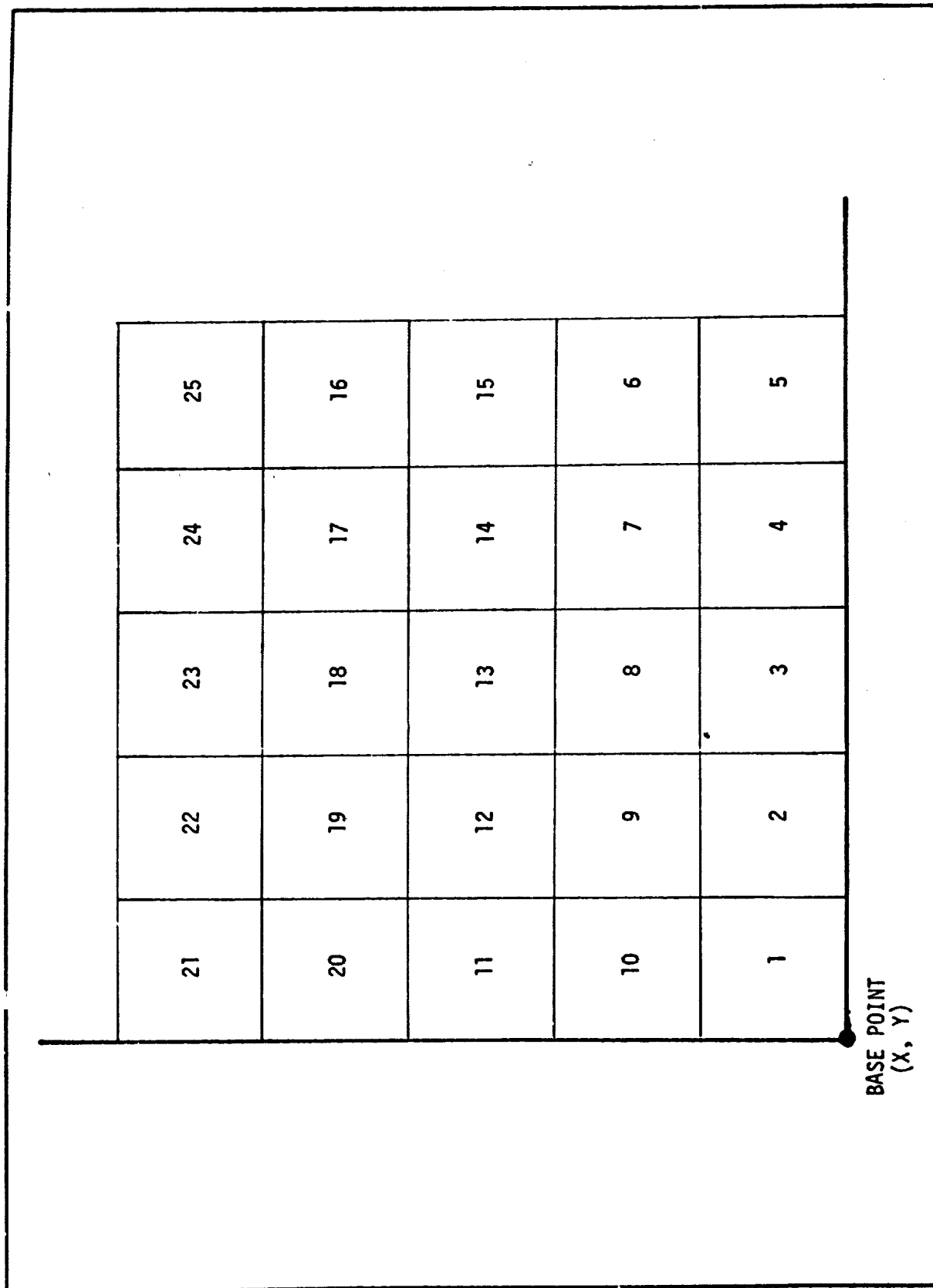
Figure C-7. Terrain and Town File Data Entry Scheme

DATA FORMAT

TITLE ___CODE FILE_____

DATE ___70 AUG 1_____ **SYSTEM** ___IMEMC_____

CARD_____ **TAPE** _X____ **TAPE DENSITY**__800__ **RECORDS PER BLOCK**__10__

TAPE LABEL____CODE_____ **NOTE: A=ALPHABETIC, N=NUMERIC**

FIELD NO.	FIELD LGTH.	CHAR. POSIT. START	CHAR. POSIT. END	CHAR. TYPE (A,N)	DATA DESCRIPTION
1	1	1	1	A	SECURITY CLASSIFICATION
2	10	2	11	A/N	CODE
3	40	12	51	A/N	CODE INTERPRETATION
4	9	52	60		BLANK (FOR GROWTH POTENTIAL)

Figure C-8. Code File Format

7. CDC 3300 Support to the USAEPG (EMETF)

    The EMETF is required to provide the Research Analysis Corporation with computer programs and magnetic tapes of mutual interference matrices which can be used on the CDC 3300 computer.

    Use of the EDCPF CDC 3300 computer continued during this report period.

8. Terminal Guidance for Indirect Fire Study - NORTHROP

    The Northrop Corporation is under contract to the Advanced Research Projects Agency (ARPA) for a study of terminal guidance as applied to indirect fire weapons. To address this problem the need existed for an estimate of characteristics and distribution of tactical targets against which these weapons might be employed. A Program Support Plan (PSP) was prepared describing the types of data as well as the medium upon which it could be made available. The data retrieval to be made from the C-E deployment of the Enemy Forces in opposition to the future time frame Army in the Field.

    Approval was received 28 August and the data was prepared and mailed on 8 September.

    The North American Rockwell Corporation is also under contract to ARPA for a study similar to that being conducted by the Northrop Corporation. A PSP similar to that provided to Northrop was prepared and forwarded to the ACSC-E and North American on 24 August. No request for formal support has been received as of the end of this contract period.

9. Support to the EMETF in Preparing the Report on the EMC and EMV of CE/EW-75

    During preparation of the CE/EW-75 analysis report the EMETF requested several retrievals of such items as field army, theater army, tactical air force and enemy troop lists. The retrievals were made on the computer and the computer printouts were reduced to an 8"x10½" Xerox master for inclusion in the final report. All masters were forwarded to the EMETF for inclusion in their camera-ready copy for delivery to the Army. Support of this type was continued through the month of August until the report was finished and delivered to Fort Huachuca. Figure C-9 is a sample of the delivery.

10. Military Reliance on the Radio Spectrum

    A printout based on the AERF will be provided to the ED for use in the national spectrum utilization study. This printout will provide the Army C-E equipments asset and investment data by 25 selected frequency bands. This data will be used to support the overall DOD information regarding the Military Reliance in the radio spectrum.

    The delivery of the complete printout has been advanced at the request of the ED from the scheduled date of 31 October to 2 October 1970. Figure C-10 is a sample of the printout.

Figure C-9. Sample of Retrieval for the CE-EW-75 Analysis Report

Figure C-10. Sample of Military Reliance on the Radio Frequency Spectrum Printout

11.   Random Access Discrete Address (RADA) System

A program support plan for the EMC test of the RADA system was pre-
pared and forwarded to the ED on 8 April 1970. Preparation of the deployment
for this effort has been delayed since the EMC analysis will not begin until
sometime in 1972.

12.   NET/TOE and AERF Data

On 20 August a sample NET/TOE listing, AERF listing, and a sample
AERF tape containing only unclassified fields of data was prepared. Supporting
information explaining the format of the AERF tape, description of data fields
provided, record size, blocking factor, and so forth, was supplied to the ED
with the sample listings and tape. Figures C-11 and C-12 are samples of the listings.

13.   Threat Assessment and Control Receiver Study

The Dalmo Victor Company is currently performing a study to define a
Threat Assessment and Control Receiver (TACOR) under Air Force Contract
F33615-70-C-1743. The system definition requires information on both the
threat and friendly radar signal environments because the TACOR system will be
required to operate in an environment where both components exist simultan-
eously. A meeting at the EDCPF is anticipated for early in the next report period to
determine what data is available to support this study.

14.   Airborne Brigade Tactical and Technical Data

A request was received 1 September that the ACSC-E be provided tech-
nical and tactical data on an airborne brigade in the 1975 time frame. The
data was to include the number of frequencies, the characteristics and class
of service for the equipments in the brigade, plus information on STANO equip-
ments.

On 4 September the task was completed and mailed. The delivery
contained:

(1)   Number of airborne brigade frequencies (nets)

(2)   Characteristics and class of service of equipments in an
      airborne brigade

(3)   Airborne brigade unattended ground sensor frequency require-
      ments

(4)   STANO equipment and characteristics

15.   EDCPF Data Base Support to a Cost Effectiveness Analysis of TACSATCOM

A request was received on 3 September for EDCPF data base support to
a cost effectiveness analysis of TACSATCOM by USACDCCEA. This support was to
be provided incrementally. First, the Force Model 1, three-corps deployment
was to be reduced to all battalion level and above nets operating in a two-
corps deployment situated geographically, and tactically committed the same,

T	TOE DATE . CH	N	ASSIGN	PARENT UNIT	UNIT TITLE	SEQ	VEH	EQUIPMENT TYPE	COMPONENT TYPE	OPERATOR	TO	C
1	0011-035G6000C0	3	DIV	DIVISION	DIV SIG BN	00370	047	AN/MRC-69	T-302/TRC-24	A TM TM 3 ALT	0	
1	0011-035G6000C0	1	DIV	DIVISION	DIV SIG BN	00800	047	AN/MRC-69	R-417/TRC-24	B TM 1 DASC 1	0	
1	0011-035G6000C0	3	DIV	DIVISION	DIV SIG BN	00110	047	AN/MRC-69	T-302/TRC-24	A TM TM 3 44	0	
1	0011-035G6000C0	1	DIV	DIVISION	DIV SIG BN	00560	047	AN/MRC-69	R-417/TRC-24	B 1 32E TM 1	0	
1	0011-035G6000C0	3	DIV	DIVISION	DIV SIG BN	00390	047	AN/MRC-69	T-302/TRC-24	A TM TM 3 ALT	0	
1	0011-035G6000C0	1	DIV	DIVISION	DIV SIG BN	00560	047	AN/MRC-69	R-417/TRC-24	B 1 32E TM 1	0	
1	0011-035G6000C0	3	DIV	DIVISION	DIV SIG BN	00790	047	AN/MRC-69	T-302/TRC-24	B TM 1 DASC 1	0	
1	0011-035G6000C0	1	DIV	DIVISION	DIV SIG BN	00380	047	AN/MRC-69	R-417/TRC-24	A TM TM 3 ALT	0	
1	0011-035G6000C0	3	DIV	DIVISION	DIV SIG BN	00150	047	AN/MRC-69	T-302/TRC-24	A TM TM 4 44	0	
1	0011-035G6000C0	1	DIV	DIVISION	DIV SIG BN	00620	047	AN/MRC-69	R-417/TRC-24	B 2 32E TM 1	0	
1	0011-035G6000C0	3	DIV	DIVISION	DIV SIG BN	00610	047	AN/MRC-69	T-302/TRC-24	B 2 32E TM 1	0	
1	0011-035G6000C0	1	DIV	DIVISION	DIV SIG BN	00160	047	AN/MRC-69	R-417/TRC-24	A TM TM 4 44	0	
1	0011-035G6000C0	3	DIV	DIVISION	DIV SIG BN	00430	047	AN/MRC-69	T-302/TRC-24	A TM TM 4 ALT	0	
1	0011-035G6000C0	1	DIV	DIVISION	DIV SIG BN	00640	047	AN/MRC-69	R-417/TRC-24	B 2 32E TM 1	0	
1	0011-035G6000C0	3	DIV	DIVISION	DIV SIG BN	00630	047	AN/MRC-69	T-302/TRC-24	B 2 32E TM 1	0	
1	0011-035G6000C0	1	DIV	DIVISION	DIV SIG BN	00460	047	AN/MRC-69	R-417/TRC-24	A TM TM 4 ALT	0	
1	0011-035G6000C0	3	DIV	DIVISION	DIV SIG BN	00130	047	AN/MRC-69	T-302/TRC-24	A TM TM 4 44	0	
1	0011-035G6000C0	1	DIV	DIVISION	DIV SIG BN	00900	047	AN/MRC-69	R-417/TRC-24	B TM 1 DASC 2	0	
1	0011-035G6000C0	3	DIV	DIVISION	DIV SIG BN	01010	047	AN/MRC-69	T-302/TRC-24	B TM 1 DASC 3	0	
1	0011-035G6000C0	1	DIV	DIVISION	DIV SIG BN	00180	047	AN/MRC-69	R-417/TRC-24	A TM TM 5 44	0	
1	0011-035G6000C0	3	DIV	DIVISION	DIV SIG BN	00170	047	AN/MRC-69	T-302/TRC-24	A TM TM 5 44	0	
1	0011-035G6000C0	1	DIV	DIVISION	DIV SIG BN	01020	047	AN/MRC-69	R-417/TRC-24	B TM 1 DASC 3	0	
1	0011-035G6000C0	3	DIV	DIVISION	DIV SIG BN	00710	047	AN/MRC-69	T-302/TRC-24	B 3 32E TM 1	0	
1	0011-035G6000C0	1	DIV	DIVISION	DIV SIG BN	00480	047	AN/MRC-69	R-417/TRC-24	A TM TM 5 ALT	0	
1	0011-035G6000C0	3	DIV	DIVISION	DIV SIG BN	00470	047	AN/MRC-69	T-302/TRC-24	A TM TM 5 ALT	0	
1	0011-035G6000C0	1	DIV	DIVISION	DIV SIG BN	00720	047	AN/MRC-59	R-417/TRC-24	B 3 32E TM 1	0	

Figure C-11. Sample NET/TOE Listing

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UNCLASSIFIED

ARMY EQUIPMENT RECORDS FILE (U)

Field	Value		Field	Value
ALLOC FREQ	17.5-18.5 GHZ, 34.9-35.6 GHZ, 93-95 GHZ	AAU	SPUR ATTEN	NOT APPLICABLE (NOT REQUIRED)
JFP NUMBER	JFP J2720371		OPERATION	40 DB MINIMUM
EQUIP NOMEN	EXPERIMENTAL BACKSCATTER MEASUREMENT SYS	AAU	OPERATION	CW
COGNIZANCY	ARMY (METR)	AAU	TUNE METHD	FIXED
FUNCTION	SPECIAL INSTRUMENTATION	CW+AAU	FREQ CONT	CRYSTAL REFERENCE AND FEL NUMBER 130A
PURPOSE	ANTI-ILLUMINATES TARGET-RCVR-ACCEPTS-RADAR			SYNCHRONIZER (VOLTAGE-STABILIZER)
	PROCESSES RETURN TARGET BACKSCATTER	AAU	CHANNELING	NONE
	EXPERIMENTAL RESEARCH.		ANTENNA	
OPR ENVIRMT	TO BE USED AT NATIONAL RANGE ENVIRONMENT.	AAU	POLARIZ	HORIZONTAL OR VERTICAL
	IT IS NOT INTENDED TO BECOME OPERATIONAL	AAU	SCAN	NONE
	AS A RANGE SUPPORT SYSTEM		GAIN	25 DB
			AZIMTH 3/W	20 DEG
GEOG AREAS	CONUS, WHITE SANDS MISSILE RANGE, N MEX	AAU	ELEV 1/4	20 DEG
EVALUATE			DESC	CONICAL HORN, LENS CORRECTED, COLLIMATING
OPR USE	NOT APPLICABLE		RECEIVER	
NUMBER EQPT			NOMEN	EXPERIMENTAL BACKSCATTER MEASUREMENT
INITIAL	1		INSTALL	VEHICULAR, AT WSMR
OPR USE	NOT APPLICABLE	AAU	TUNE RANGE	17.5-19 GHZ, 34-36 GHZ, 93-95 GHZ
OVER-AREA		AAU	TUNE METHD	FIXED
TARGET DATE			CHANNELING	NONE
OPR AVAIL	02770-02771	AAU	FREQ CONT	NOT APPLICABLE
OPERATION	NOT APPLICABLE	AAU	STABILITY	.000001 PCT
SPECT SGNR	NO	AAU	TYPE EMISS	A0
REMARKS	EMISSION BANDWIDTH - THESE BANDWIDTHS AREA	AAU	RF 3/W	
	BASED UPON CHARTS FURNISHED BY THE			-3 DB
	MANUFACTURER OF THE FEL NUMBER 130A	AAU	IF 3/W	SEE REMARKS
	SYNCHRONIZER USED TO CONTROL THE			-3 DB
	KLYSTRON. RF BANDWIDTH - THE RCVR	AAU		NOT APPLICABLE
	UTILIZED IN THIS SYSTEM IS A	AAU	DETECT 3/W	
	CRYSTAL-VIDEO TYPE. THE RF BANDWIDTH IS			-3 DB
	LIMITED BY A FERRITE ATTENUATION DEVICE	AAU	SENSITIVITY	-80 DBM FOR 6-DB S/N
	LOCATED AHEAD OF THE CRYSTAL-VIDEO	AAU	IF FREQ	NOT APPLICABLE
	DETECTOR. THE BANDWIDTH OF THIS DEVICE IS	AAU	LOCAL OSC	
	APPROXIMATELY 1 GHZ + AND - CENTERED AT	AAU	FREQ RNGE	NOT APPLICABLE
	15 GHZ, 35 GHZ AND 94 GHZ	AAU	NORM	NOT APPLICABLE
DATE APPROVD	03/04/70	AAU	AUJ	NOT APPLICABLE
TYPE ALLOC	EXPERIMENTAL	AAU	ANTENNA	
EXTENT USE	3-4 HOURS PER DAY, INTERMITTENT USE	AAU	POLARIZ	HORIZONTAL OR VERTICAL
PREV ALLOC	NONE		SCAN	NONE
TRANSMITTER			GAIN	25 DB
NOMEN	EXPERIMENTAL BACKSCATTER MEASUREMENT	AAU	ELEV 3/W	20 DEG
TUNE RANGE	17.5-18.5 GHZ, 34.9-35.6 GHZ, 93-95 GHZ	AAU	DESC	CONICAL HORN, LENS CORRECTED, COLLIMATING
INSTALL	VEHICULAR, AT WSMR	AAU	IMAGE RESP	NOT APPLICABLE
POWER AVG	.000400 .001500 .000400	AAU	SPUR RESP	NOT APPLICABLE
TYPE EMISS		AAU	UNIT PRICE	15000.00
EMISS 3/4				
-3 DB	100 MZ (SEE REMARKS)	AAU		
-20 DB	600 MZ (SEE REMARKS)	AAU		
-60 DB	3000 MZ (SEE REMARKS)	AAU		
FILTER 3/W				
OTHER	1.5 GHZ (OCCUPIED BW) NO FILTER USED	AAU		
STABILITY	.000001 PCT	AAU		
MODUL/CODG	NONE	AAU		
PULSE INFO				
RATE	NOT APPLICABLE	AAU		
HARM ATTEN	40 DB MINIMUM	AAU		

UNCLASSIFIED

Figure C-12. Sample Army Equipment Records File Listing

so far as is possible, as Force Model 1. Then, to meet the requirements of the first increment, a printout was to be prepared showing (see figure C-12):

    (a) Net number

    (b) Net description

    (c) The number of stations within the net

    (d) Distance in kilometers for the transmitter and receiver with the greatest separation in the net

    (e) The mean separation distance for all transmitters and receivers in the net

    (f) The nomenclature of all equipments in the net and how many of each

    (g) Duty cycle

    (h) Quantity of communication or signal MOS-rated personnel required to man the net for a 24-hour period

    (i) Priority of the net

The printout was requested in the following two formats:

    (a) All nets with a mean link distance greater than 40 kilometers

    (b) All nets with a mean link distance greater than 60 kilometers

This requirement was met and the printouts delivered 29 September.

An additional requirement of this type was received 30 September. This requirement is the same as the first, but limited to nets with a mean distance of 39.99 kilometers or less. This requirement will be produced and delivered during the first week of the next report period.

The second requirement is for the same type of information, but based upon Force Model 2, an independent corps. This portion of the task will be produced and delivered in October.

16.   <u>Reproduction of Printout of Frequency Allocation to Equipment File (FAEF) for Army, Navy, and Air Force</u>

On 18 September 1970 a copy of the FAEF was provided to the U. S. Army Electronic Proving Ground. The next complete printout for the FAEF is scheduled for 1 January 1971.

17.   <u>Theater Army (COMMZ) Tactical Overlays and Communications Systems Diagrams</u>

On 23 September the EDCPF provided to the USASTRATCOM tactical

NET DESCRIPTION	NET NUMBER	STATIONS IN NET	MAXIMUM LINK DIST	MEAN LINK DIST	EQUIPMENT	COMPONENT	NUMBER EQUIPUR	COMPONENT DUTY CYCLE
NET A	XXXXXXXXX	0013	023773	031899	R-1297(1)/ARC	R-1297/ARC	0005	0
					AN/VRC-67	R-442/VRC	0005	0
					AN/VRC-67	RT-524/VRC	0001	3
NET B	XXXXXXXXX	0013	017092	009315	AN/VRC-67	RT-524/VRC	0001	3
					AN/VRC-67	R-442/VRC	0005	0
					R-1297(1)/ARC	R-1297/ARC	0005	0
NET C	XXXXXXXXX	0013	026066	012522	AN/VRC-67	RT-524/VRC	0001	3
					AN/VRC-67	R-442/VRC	0005	0
NET D	XXXXXXXXX	0011	022464	012668	R-1297(1)/ARC	R-1297/ARC	0005	0
					AN/VRC-67	RT-524/VRC	0001	3
					AN/VRC-67	R-442/VRC	0006	0
					R-1297(1)/ARC	R-1297/ARC	0005	0
NET E	XXXXXXXXX	0013	035164	016992	AN/VRC-67	RT-524/VRC	0001	3
					AN/VRC-67	R-442/VRC	0005	0
					R-1297(1)/ARC	R-1297/ARC	0005	0
NET F	XXXXXXXXX	0013	032461	015615	AN/VRC-67	RT-524/VRC	0001	3
					AN/VRC-67	R-442/VRC	0005	0
					R-1297(1)/ARC	R-1297/ARC	0005	0
NET G	XXXXXXXXX	0013	043960	019116	AN/VRC-67	RT-524/VRC	0001	3
					AN/VRC-67	R-442/VRC	0005	0
					R-1297(1)/ARC	R-1297/ARC	0005	0
NET H	XXXXXXXXX	0042	043250	016213	AN/VRC-67	R-442/VRC	0001	0
					AN/VRC-46	RT-524/VRC	0005	3
NET I	XXXXXXXXX	0002	053874	017367	AN/VRC-67	R-442/VRC	0001	0
					AN/VRC-46	RT-524/VRC	0001	3

Figure C-13. Sample Single Channel Net Data to Support TACSATCOM Cost Effectiveness Study

overlays covering Theater Army-75 deployment, 1:250,000 scale; the Special Forces deployment in the Field Army area, 1:250,000 scale; the Special Forces deployment in the Enemy Area, 1:250,000 scale; also eleven special area inset overlays, scale 1:50,000, and communications systems diagrams covering STRATCOM, Multichannel Systems, Theater Army-75, scale 1:250,000; and the Theater Air Force Multichannel Systems, scale 1:1,000,000.

APPENDIX D

EMCP MANAGEMENT INFORMATION AND CONTROL SYSTEM (MICS)

During the report period the MICS data base was updated based upon a review of program data sheets at Chief, Research and Development (CRD), Department of the Army; Headquarters, AMC; and Headquarters, USACDC. The data sheets reviewed included:

DD 1634 (Research and Development Planning Summary)
AMC 1534R (Program Data Sheet)
AMC 1536R (Program Data Sheet)
AMC 1701R (Program Data Sheet)
DA 1774-R (Army RDTE Status Report - CSCRD-8(R-4)
AMC 104 (Phased Events Report)

Data sheets DD 1634, AMC 1534R, AMC 1536R, and AMC 170-R were reviewed at CRD. Data sheets DA 1774-R and AMC 104 were reviewed at Headquarters, AMC and OACSC-E. These last two data sheets are quarterly reports and provide more accurate and recent data regarding time estimates when certain life cycle events will occur. This information on life cycle events permits a better determination of when EMC analyses for materiel development efforts should be scheduled. RDTE numbers and related RDTE titles provided basis for correlating the MICS and the above listed data sheets.

The MICS data base was also modified to include the following elements of data:

1. USACDC Action Numbers

2. USATECOM Test Number (Technical Resources Management System - TRMS)

3. MALLARD Joint Engineering Agency (JEA) Number (relates to frequency allocation requests)

4. Army Force Development Plan (AFDP) Number

5. Type of Requirements/Objectives Document

The USACDC action numbers and TRMS numbers were added to obtain better correlation of data between MICS and the USACDC/MIS and the USATECOM (TRMS). The USACDC report, "List of Materiel Actions for OACSC-E," was used to determine USACDC action numbers. Program data sheets listed previously provided the basis for determining appropriate "TRMS" numbers.

The MALLARD portion of the MICS data base was amended to include current task directives (TD's). These task directives reflect directed and funded MALLARD efforts. These task directives were entered into the MICS as subtasks to MALLARD RDTE tasks 1X663717D45800 and 1X663717D45801. Where appropriate, the MICS also indicates a correlation of the following type numbers for appropriate MALLARD subtasks Task Directives, JF-12, JEA, and Issue.

Work continued on the development of a basis for determining a relative

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D-1

order of importance or a priority rating for EMC tasks currently scheduled to be performed by the EMETF during FY 1972. Priority ratings were completed for the FY 1972 tasks late in the report period.

The tactical communications portion of the MICS data base is also being amended to include non-radiators and receivers. This will make the MICS more responsive to overall tactical communications requirements.

In order to expedite system turn-around and alleviate the possibility of noise interference via the remote terminal, the operational programs were compiled on binary cards. By this method, the CPU operator loads the binary cards into the CDC 3300 card reader and the programs are fed through the card reader by system control cards. Only data on the system control cards and MICS update cards are transmitted from the remote terminal. Approximately 25 control cards are needed to replace the 2,000 source-deck programs.

Program modifications are being made which will allow four J/FP allocation data entries and CDOG Paragraph Numbers.

Efforts during the next report period will include:

1. Developing a more easily readable display format.

2. Developing the capability to contain TACOMAP data element requirements.

3. Updating, modifying and expanding the MICS data base as required. Quarterly management reports received at Hq, USAMC plus other types of appropriate reports will be used for update.

4. Expansion of the data base to make its contents more responsive to tactical communications and Project MALLARD. The MALLARD structure will include MALLARD task directives.

5. Preparation of automated reports which will indicate EMC analysis requirements for FY 1972 and FY 1973-76 time frame. Priority ratings will be assigned specific projects/tasks scheduled for an EMC analysis during FY 1972.

6. Further development of flow charts for tasks selected for EMC analysis to permit PERT/Time analysis of such efforts to be conducted.

7. Conduct of PERT/Cost analysis of selected tasks.

Recommended changes to the RDTE program data sheets will be prepared to reflect the requirement for data to support EMCP management. Of particular interest is the addition of data elements such that frequency allocation and EMC analysis requirements can be identified and predicted. These data sheets are prepared by the developing activities within the appropriate major commands of USAMC and USASA.

APPENDIX E

DEVELOPMENT OF NEW C-E ENVIRONMENTS

1.   Enemy-75 CAA and Front

        This deployment requires addition to the environment of all ground
combat divisions (8) in second echelon and reserve posture, a significant re-
mainder of the inventory of Army echelon nondivisional units, the total tactical
air support complement, most of the Front troop units, and all multichannel links
except those which are organic to committed divisions. It is expected that all
fixed files required to support deployment of these additional units will become
operational during the latter part of the next report period.

        Call cards and controlled distribution cards for every company size
unit in the eight reserve divisions have been prepared, and will be keypunched
early in the next report period. The controlled distribution cards each con-
tain the map coordinate for a discrete unit, and the control data governing
distribution of the C-E components comprising the deployment. The balance of
the required call cards and controlled distribution cards are undergoing com-
pletion in increments scheduled for finalization concurrently with operational
availability of the fixed files. The cards for the eight divisions represent
about 50 percent of the total number of additional units required to complete
the entire Front.

        It is intended to prepare six tactical overlays and one multichannel
system diagram, each in as many separate panels as required to display adequately
each of the overlay situations. Three tactical overlays and the multichannel
system diagram are under concurrent preparation; the other three overlays will
be initiated early in the next report period. The proposed type overlays, on
mylar, are identified as follows:

        a.   All units and CP fragments in the Front, down to and including
regimental level, at scale 1:250,000 (2 panels).

        b.   A tactical overlay for each ground combat Army, down to company
level, at scale 1:50,000 (average 3 panels each).

        c.   All multichannel links in the Front, exclusive of the divisional
organic systems, and all known users served by multichannel terminals, at
scale 1:250,000 (1 panel).

        Preparation of the multichannel deployment required extensive research
and systems engineering development effort. Sanitized information available in
the CD-107 series of publications, standing alone, does not support the develop-
ment of a total multichannel concept as the concept must be expressed in deploy-
ment data. The category of classification affixed to key pages of CD-73 (1966)
prevent utilization of significant portions of this document to support complete
development of data within the upper limits of classification applicable to
EDCPF deployments. A sample multichannel deployment applicable to Situation III
has been prepared by the EDL at Mountain View, California in support of another
task, and a draft copy was made available to the EDCPF early in September. The
sample deployment has been analyzed, a concept developed from the analysis,

and in accord with the conceptual rules the sample has been extrapolated to a complete multichannel deployment containing approximately three and a half times as many links as the sample. Care was exercised in extrapolation of only those type equipments, links, nodes, and terminal subscribers as displayed on the sample in order to maintain the same category of security classification as borne by the sample.

A research visit was made to the EDL at Mountain View, California late in August, and several research visits were made to USASA Test and Evaluation Command (TEC) at Fort Huachuca early in September. These visits were of significant assistance. It was determined that the non-codeword classified content of the CD-76 series of documents and of the CD-73 document as required to support EDCPF deployment effort was of such volume as to merit a request to the originating agency to provide machine produced extraction. The USASATEC is not authorized to permit removal of manually extracted notes in any significant quantity, and this prohibition appears to additionally support the request for machine extraction. The requested extractions have not yet been received at the EDCPF. References to three classified resource documents, considered essential in support of EDCPF deployment of Soviet military environments, were developed during visits to the USASATEC and request for these publications has been made.

2. MALLARD

The background deployment effort was initiated early in the quarter by preparation of a current time frame troop list of all elements considered appropriate to a two-corps, eight-division U. S. force in western Europe, operating in a high intensity situation. The division mix includes two Armored divisions, two Infantry divisions, and four Infantry (Mechanized) divisions. Additional combat units are provided for the two corps and the field army in two separate Mechanized brigades, three Armored Cavalry regiments, and three Air Cavalry squadrons. These major elements were derived from the USA Command and General Staff College (USAC&GSC) Reference Book (RB) 101-1 dated 1 March 1969. The source of corps, army, and FASCOM units was the RB 101-1 troop list for a three-corps force, as modified by the EDCPF to satisfy a two-corps force requirement. The same reference book served as the source for the maneuver battalion mix within each of the three type divisions, the separate brigades and the Cavalry regiments. In view of current events and the RB 101-1 guidance, one Chapparral/Vulcan ADA battalion was added to each division.

The EDCPF has prepared a general and special situation statement as a basis for the task organization and disposition of all field army elements within the prescribed dimensions. The situation statement follows:

General Situation

Following a general attack by aggressor forces on a broad front into western Freeland, the Allied forces, of which the First U. S. Army is a part, conducted a series of delaying actions from the eastern border of Freeland to their present positions on Phase Line Red as shown in figure E-1. Aggressor has been brought to a temporary halt as a result of overextension of his supply lines. However, his superior force provides the capability of renewing his

attack at any time. Neither side has employed nuclear weapons; however, each
has the capability to do so at any time. The mission of the Allied forces is
to delay the Aggressor until reinforcements become available. The air war has
resulted in clear establishment of air superiority by neither combatant. Both
sides have the capability of achieving local air superiority for limited periods
only.

Special Situation

First U. S. Army is an interior army of the Allied forces. It is a type
field army consisting of eight divisions organized as two corps. The troop
list and task organization for First Army are omitted. First Army is supported
by a type tactical U. S. air force consisting of 12 fighter, three reconnaissance,
six airlift and one refueling squadron. The troop list and task organization
for the First U. S. (Tactical) Air Force are omitted.

All Allied forces have been required to defend along extended frontages.
The frontage of the First Army is 260 km. The general disposition of major
First Army elements is shown in figure E-2. Natural barriers on the flanks of
the army sector are screened by armored cavalry resources available to each of
the corps commanders. The center of each corps front is characterized by excep-
tionally rugged terrain, generally impassable to heavy tracked and wheeled
vehicles. Each corps commander has decided to assign responsibility for the
defense of this central sector to his infantry division. The balance of the
front is characterized by relatively flat corridors entering the corps positions.
These corridors provide excellent avenues of approach for heavy vehicles. The
Aggressor force is composed of a preponderance of tank and motorized infantry
units and it is considered that these corridors pose the greatest threat to the
corps positions. Each corps commander has directed that responsibility for the
defense of these two sectors be assigned to his mechanized infantry divisions,
and to attach his separate mechanized infantry brigade to the division defending
the broader sector. Each corps commander has designated his armored division
as corps reserve with priority to support the corps counteroffensive in the
sector defended by the reinforced Mechanized Infantry division. The armored
division is prepared for commitment to counterattack in the sector of the other
mechanized division, the infantry division sector, or the sector of the armored
cavalry regiment, in that order. The infantry division commanders of each corps
employ an area defense posture; the division commanders of the mechanized
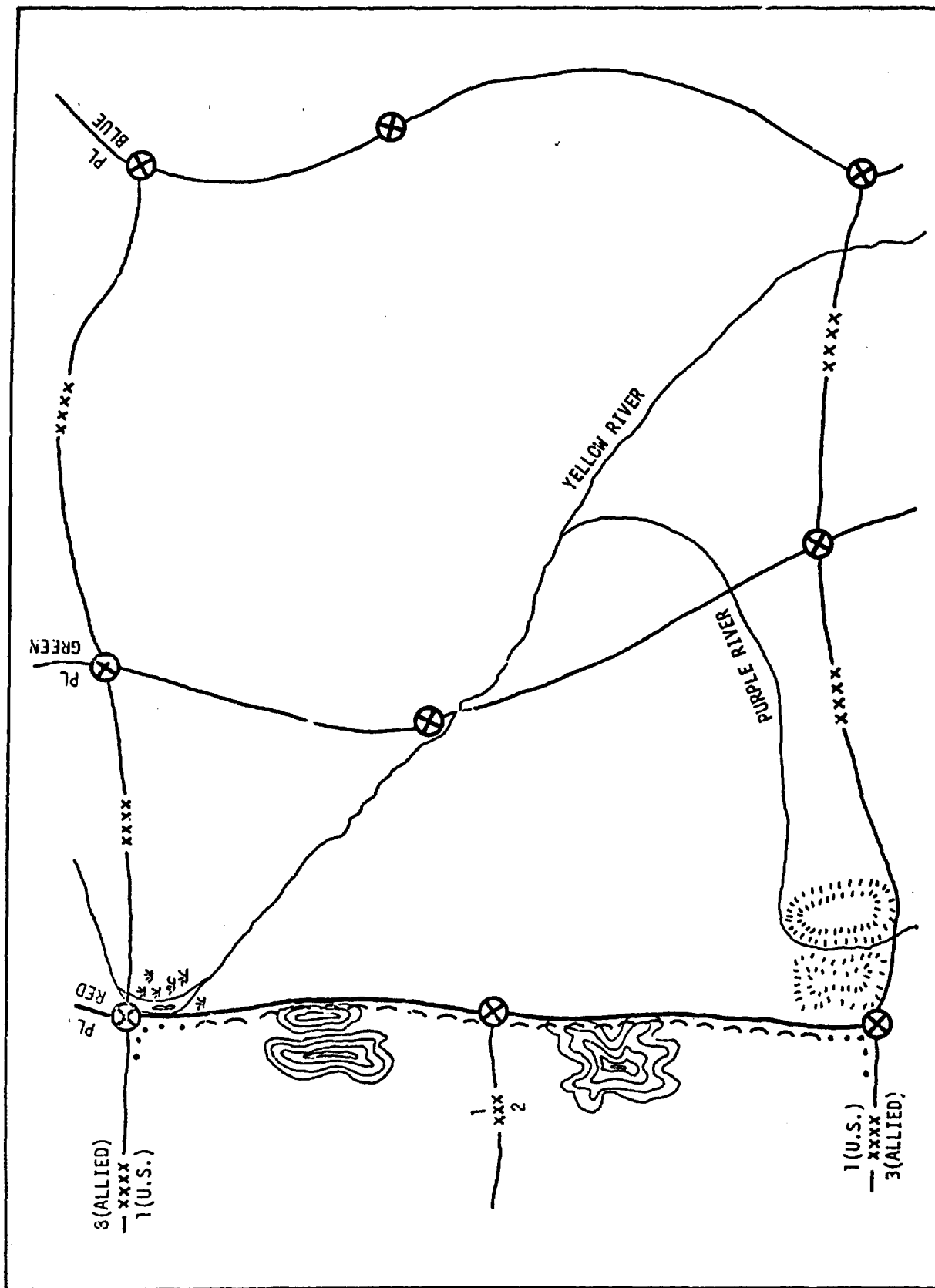infantry divisions employ the mobile defense.
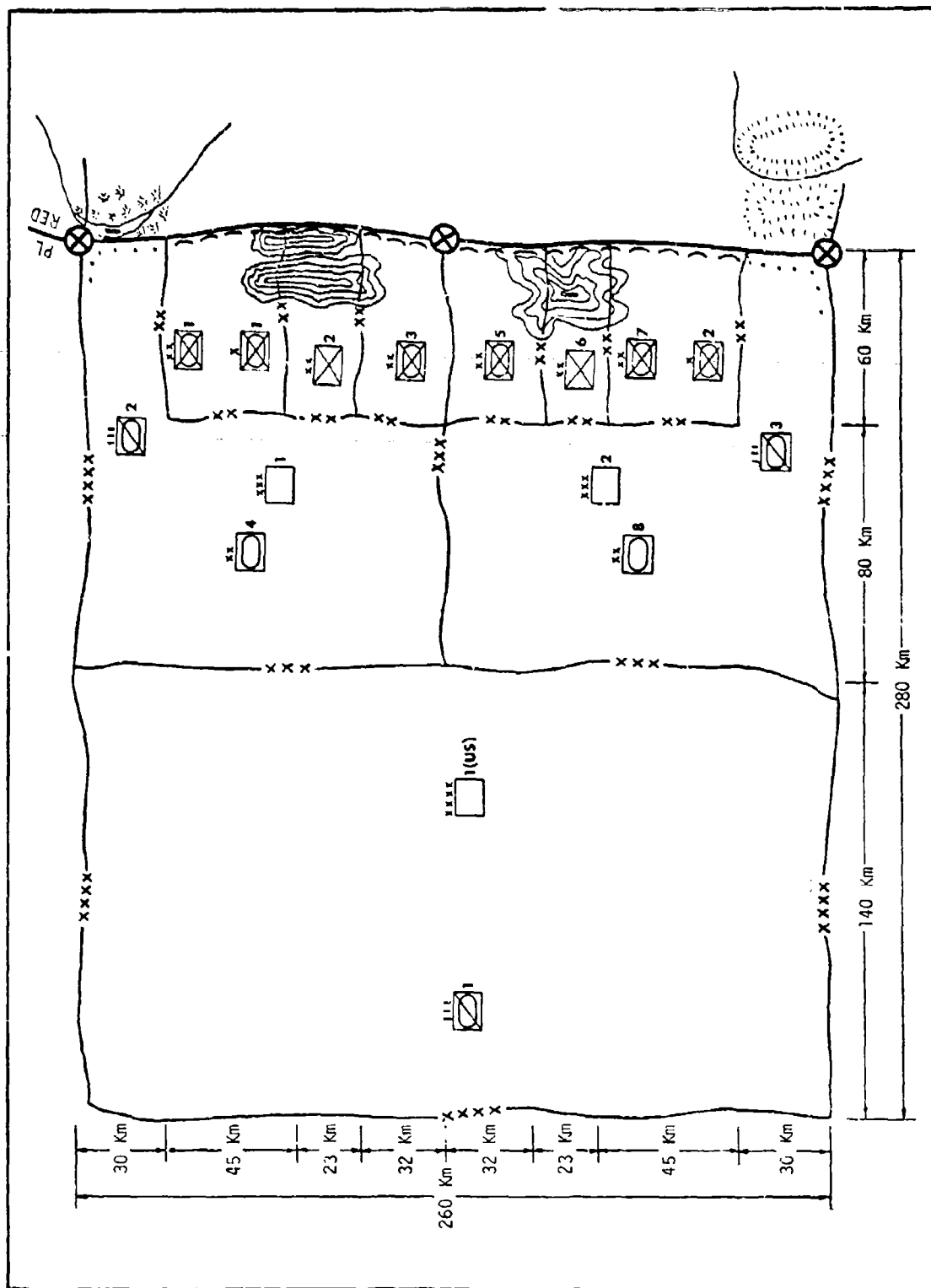
Figure E-1. Disposition of Allied Forces

Figure E-2. Disposition of Major First Army Elements

E-5

DOCUMENT CONTROL DATA - R&D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

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13. ABSTRACT

This report summarizes the work accomplished during the period 1 July 1970 through 30 September 1970 by the Environmental Data Collection and Processing Facility (EDCPF).

A summary of the tasks assigned to the EDCPF is given and the progress and status of these tasks are outlined. The tasks covered are: general administration procedures and changes; operational support as directed by the ED; further development of the C-E Environmental Simulation System; updating of data base files for the U. S. and opposing forces; frequency management support provided to the ED by the Washington Engineering Group; development of a Management Information and Control System; and conferences attended by EDCPF personnel.

DD FORM **1473**
1 JAN 64

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Electromagnetic Compatibility Frequency Allocation Frequency Assignment Document Selection Information Retrieval Management Information System Decision-Making Systems						

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It is highly desirable that the abstract of classified reports be unclassified. Each paragraph of the abstract shall end with an indication of the military security classification of the information in the paragraph, represented as *(TS)*, *(S)*, *(C)*, or *(U)*.

There is no limitation on the length of the abstract. However, the suggested length is from 150 to 225 words.

14. KEY WORDS: Key words are technically meaningful terms or short phrases that characterize a report and may be used as index entries for cataloging the report. Key words must be selected so that no security classification is required. Identifiers, such as equipment model designation, trade name, military project code name, geographic location, may be used as key words but will be followed by an indication of technical context. The assignment of links, rules, and weights is optional.